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THE

SANITARIAN,

A MONTHLY MAGAZINE

DEVOTED TO THE

PRESERVATION OF HEALTH, MENTAL AND PHYSICAL CULTURE.

VOLUME IX.

A. N. BELL, A.M., M.D., Editor,
T. P. CORBALLY, A.M., M.D., Associate Editor.

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THE AMERICAN PUBLIC HEALTH ASSOCIATION.

Eighth Annual Meeting, held in Grunewald Hall, New Orleans, Dec. 7-10, 1880.

ADDRESS OF WELCOME.

By HON. LOUIS A. WILTZ, Governor of Louisiana.

Mr. President and Gentlemen of the American Public Health Association: On the part of the scientists and medical faculty, as well as of all citizens who take interest in questions relating to public health, all who seek for material progress and public prosperity, and all who favor wise sanitary legislation, I am authorized to extend the hand of cordial welcome to the members of the American Health Association. Not only these and all our learned classes, but the masses of our citizens likewise, join in this salutation, with just pride that their State and city are thus distinguished by your choice and honored by your presence. We all feel that the selection of New Orleans as the place of the Annual Meeting of a body so eminent, and for objects of such high import, is a favor and an honor to be received with thankful pleasure. We know that you might have chosen a place of meeting which you could have reached in less time and at less expense—some city more convenient because more central and better favored with lines of rapid travel. Had you done so no complaint would have been raised here. Good care will be taken that you do not repent your choice, for however intelligently your great work might have been appreciated elsewhere, however kindly you might have been entertained in some other city, I am sure you will find as much appreciation and as much hospitality in New Orleans.

You are the representatives of the medical faculty of the whole country, and the people of this city know very well how to give to that profession the exalted esteem and consideration to which it is entitled. While fortunes and imperishable records have been won by Louisianians in other pursuits, there are no names dearer to the memory and hearts of our people than those of the great doctors who have studied at our schools and spent lives of toilsome practice

among our families. No names are spoken with more reverent affection among us than those of the worthy, learned, and noble men who fought here against disease and pestilence until gathered to their rest. Taught by them, and by those now living as their worthy successors, our people know what esteem and consideration are always due to good doctors. They know what it costs to become practitioners deserving of confidence, the careful probation which they must undergo, the toilsome study by which they must add to scholastic attainments the scientific knowledge which the rules of the profession wisely exact. They know that the confidence of the people is gained slowly, even by the most deserving, and that perplexities meet the physician on every side until such confidence is gained. They know what success costs; that it is only through long and close study that the student enters the outer door of the profession; that it is only through patient waiting that practice comes; that it is only through practice made successful by skill and judgment that professional honors are won. In your profession success presupposes desert more uniformly than in any other pursuit, and such success is the substantial diploma awarded for profound study and for long and patient attendance upon the suffering, for midnight rides through rain and snow, for countless acts of self-denial, for manly forbearance towards the unreasonable, the petulant, and the envious, for calm toleration of complaints, caprices, and whims, for wise reticence and counsel-keeping, and for impartial devotion to poor and rich alike. Our doctors are our best friends, because they help us when we most need help; wherefore, doctors, from whatever city, State, or country they may hail, come to us indorsed with the love, the confidence, and the approbation of those families who have, like ours, found in their doctors an ever-present help in their days of trouble.

You now come from your separate fields of honorable toil to renew your co-operative exertions for the public good. You meet here to devise ways and means by which all parts of the country may be protected, to give sound advice to States and cities as to the best means of promoting health, to find out methods of preventing the importation and diffusion of contagious and infectious diseases, to contrive better safeguards against sordid empiricism and brazen-faced quackery, to promote the elevation and influence of the medical faculty, to stimulate the growth of true knowledge, to encourage scientific investigation, to purify the code of medical ethics, to raise the standard of professional character and conduct, to consolidate and strengthen the medical fraternity and in general to do what may be done during the brief term of your session towards the improvement of the sanitary condition of the whole country.

I am not expected to suggest specific subjects for your consideration, but I will venture here to present one request in behalf of the reputation of my native city, which is, that you take some friendly care to examine and consider its mortuary records, its hygienic history, its present condition, its preventive ordinances, its well-ordered markets, its model hospital, its broad and open wharves, the wide diffusion of its inhabitants, and especially the cleanliness, sobriety and orderly behavior of its laboring classes. By observing these things while here, you will be able to correct some of the very unjust and se-

riously damaging prejudices commonly entertained against New Orleans, and spread throughout the country and exaggerated beyond all reason or excuse. It is known that, except in years of epidemic, our city is as healthy throughout the year as any large seaport city on either continent; yet the tongue of idle detraction or interested rivalry would make it seem a hotbed of pestilence. Its character is so falsified that the occurrence or report of a solitary case of dangerous disease produces panic fear throughout a dozen States. To you the damage thus wantonly inflicted upon our commerce is very evident, and by correcting these false impressions, you will confer upon us a favor of incalculable value.

It is with the utmost confidence that I pledge to members of this body from other States and cities the most courteous attention of those who represent this State and this city, to all suggestions and propositions which they may propose looking to the general good. I can safely assure them that the members from this State will ask for no special consideration, nor will they claim for New Orleans any action or recommendation which will in any wise discriminate in our favor, or which will not regard the general benefit of the whole valley of the Mississippi, and of the American people everywhere. As our sanitary and quarantine authorities have at all times met the public in a spirit of entire candor, as they have at all times freely communicated to us all important facts that came to their knowledge touching the health and safety of the public, equal candor and freedom may be expected from them now. They will furnish you with facts and records relating to infectious and contagious diseases, reaching back to the early history of the State. They can supply the data and statistics, which have at all times been freely communicated to the press and the public. Having long battled against diseases in all their varied forms, and having especially made valiant warfare against epidemics, they are able, as well as willing, to give to this eminent and honorable body the benefit of their experience.

On the conclusion of his address Governor Wiltz introduced

HON. I. W. PATTON, Mayor of New Orleans,

who, in a short speech, informed the ladies and gentlemen present that it was with unalloyed pleasure that he extended to them the hospitalities of the city.

At the conclusion of Mayor Patton's welcome Governor Wiltz introduced

DR. J. P. DAVIDSON,

Vice-President of the Louisiana State Medical Society, who addressed the Association in the following words:

Mr. President and Gentlemen: The pleasing duty has been assigned me to greet you in behalf of the State Medical Society, and the New Orleans Surgical and Medical Association, with a cordial welcome to our city—to convey to you their heartfelt desire that your sojourn in our midst may be, in every respect, gratifying, and that you may carry back to your homes many pleasant souvenirs of this visit to us.

We feel highly honored, Mr. President, by the selection of New Orleans as the place of meeting this year of the American Public

Health Association, and rejoice in the opportunity offered by your presence of drawing closer by acquaintance and friendship the bonds uniting in one brotherhood the sanitarians of our country. We rec ognize with emotions of pride the self-sacrifice and devotion to public good which have brought together on this occasion so many distinguished laborers in the broad field of sanitary and hygienic science, who have traveled hundreds of miles from their homes and walks in life, to deliberate upon measures for limiting the prevalence of diseases generally regarded as preventable, and by consequence extending the comforts, the health and the happiness of mankind.

We recall with pleasure what has been already achieved by this body, in sanitary work; in the successful investigation into the nature and origin of endemic and epidemic diseases; the sources of contagion and infection, their methods of communication, and the best means for their prevention, and last, but not least, the influence of this Association in awakening a general interest in the important subjects of sanitation, public health and preventive medicine, and the diffusion of information relative thereto among the masses of our people.

The records of these past labors give encouragement for the future, and we cannot but indulge the hope that much may be accomplished at this meeting towards arresting the great calamities of disease, which, with our present knowledge, we find it difficult to combat and prevent.

In this city, so often ravaged by the pestilence "that walketh in darkness and that wasteth at noonday," whose muffled footstep gives no warning of approach, and whose mysterious pathway is only traceable by the desolation it has wrought, your advent has been hailed by all classes of its citizens with expressions of the liveliest interest and expectation, confident in the belief that you would, in your wisdom, devise efficient measures for retrieving it from the scourge of the past, by promoting a system of sanitation and hygiene adapted to its necessities, conferring on it and the vast regions of the Mississippi Valley, of which it is the great depot, the blessing of an assured future of security and health. May the labors of this meeting be crowned by these signal blessings, and earn for it the praise of all who hold in regard the highest interests of their fellow-man.

In conclusion, gentlemen, with hearts beating in unison with your own in every aspiration for the advancement of our noble science, and going out to you in every warm and generous impulse, I bid you welcome in the name of the united profession and of our State and city.

———o———

PRACTICAL SANITATION—PRESIDENTIAL ADDRESS.

By JOHN S. BILLINGS, M.D., Surgeon U. S. Army, President.

Our Eighth Annual Meeting finds us all in the Crescent City, the city in whose health problems we have all taken so much interest, the city whose future depends so much upon sanitary science.

I take great pleasure in being able to congratulate you upon the flourishing condition of the Association, and on the growing interest

shown in its meetings and its work. Its financial condition is now very satisfactory, as is shown by the report of the Treasurer, to whose energy and tact this is largely due. It numbers among its members, nearly every practical sanitarian or person specially interested in public health matters in this country, and it is especially gratifying to see so many of them present at this meeting, and thus showing, in many cases, at some personal cost and sacrifice, their interest in its operations.

But though so many are here, they are not all here. Death has been amongst us during the year, and we have to mourn the loss of our first Vice-President, Dr. Samuel Choppin, of this city, and of Dr. Samuel Lilly, the member of our advisory committee for the State of New Jersey. Dr. Choppin had become well known at the last two meetings of the Association as a man of great energy, who had opinions of his own, and the courage to act on them in spite of strong opposition, and his untimely death is especially deplorable at the present time. Dr. Lilly was, perhaps, less known to the Association, but he was a prominent man in his State, and took much interest in the progress of public hygiene. At the time of his death he was one of the judges of the Court of Appeals, and specially interested in the question of how best to deal with the criminal insane.

Our constitution declares that "the objects of this Association shall be the advancement of sanitary science, and the promotion of organizations and measures for the practical application of public hygiene."

Science, sanitary or other, is advanced by the increase or by the diffusion of knowledge. The work of such associations as this is mainly the diffusion of the knowledge of the discoveries made by individual investigators, by providing an audience for those who have something to tell us about the causes of diseases or the best means of avoiding or destroying them, and by this educational process on the one hand stimulating research, and on the other securing practical results.

Until quite recently, very little has been done in this country towards increasing our knowledge of the causes of disease by observation and experiment directed to that end. The discovery, by Dr. Bowditch, of the relation between soil moisture and consumption, is the principal thing of this kind which we have to note. We have not had the statistical data, such as the registration system of Great Britain provides, nor the laboratories for experimentation in comparative physiology and pathology such as are to be found in Germany, nor the trained statisticians and scientific observers who could make proper use of these things if wehad had them. All these, however, will come; some of them are now here. For the most part they can only be provided by governments, their cost and the length of time required to produce really valuable results, placing them beyond the reach of individual effort.

It is, therefore, one of the duties of this Association to use its influence to induce our legislative authorities to provide for scientific sanitary investigations, and to see that these are committed to proper persons, and the results duly published. We have already done something in this respect as regards the work of the Yellow Fever

Commission and of the National Board of Health; but we ought to do more. The Report of the Yellow Fever Commission, although completed, has not been published, and the same is true as regards the Report of the Havana Yellow Fever Commission, of the National Board. These reports have been prepared by competent men, with much labor, and at considerable expense, forming a substantial addition to our knowledge of this sphynx of diseases, and it would be well if this Association would formally urge their speedy publication.

At the recent meeting in Boston of the Association for the Advancement of Science, Prof. Barker gave an eloquent oration on the problem of life, in which he declares that though the answer is not yet, "and though the *ignis fatuus* of life still dances over the bogs of our misty knowledge, yet its true character cannot finally elude our investigation."

The prediction may be over-sanguine, but the best and most highly cultured brains in the world are attacking the problem on all sides with the balance and the microscope, with the culture cell, wherein we may almost see the evolution of the simplest organism, or with the plethysmograph, upon whose dial we may read of the intensity of the thought of the person to whom it is applied, and we may hope for great advances within a few years in our knowledge of vital processes and of the circumstances which favor or hinder those processes. Now, all such advances are advances in sanitary science also. It is probable, that is to say, it is more than an even chance, that if we knew the whole life-history of half a dozen minute organisms, with the reactions which occur between these and surrounding media, such as air, water, and organic matter of various kinds, dead or living, we should know the causes of some of our most destructive diseases, and could proceed with their prevention upon truly scientific principles.

The work of educating the public as to the importance of sanitary measures has progressed well during the past year, and has been carried on not only by physicians but by the pulpit and the press.

The growing interest of the clergy in public health matters is very satisfactory, since it is desirable, for the sake of both religion and hygiene, that clergymen of all denominations should be practical sanitarians.

Foul air, food badly cooked, impure water-supply and dirty skins are responsible for a vast amount of sin and crime, and ignorance and filth are Siamese twins.

All clergymen recognize these facts in a theoretical sort of way, but many of them do not see that it is their duty to qualify themselves to give to their parishioners practical advice to secure cleanliness as well as godliness. Nor is the necessity for such advice confined by any means to the occupants of shanties and tenement houses. The health and cheerfulness, and consequently the morality, of the families of many of those who pay for the best pews in our most fashionable churches would be greatly improved if they had purer air to breathe in their houses. A faulty system of house drainage will produce not only actual sickness and death, but lassitude, want of appetite, weariness and fretfulness, dissatisfaction among and with the servants, and a pessimistic state of mind with regard to things in general upon which the weekly sermon will have very little influence.

Let the clergyman learn to recognize the real, palpable, material bogies which lie in his path, and how these are to be destroyed or driven away; let him obtain sufficient knowledge of the laws of physics, physiology and existence to keep him from certifying blindly to the efficiency of patent nostrums of various kinds; let him understand the difference between skin-plumbing and good work; between a properly ventilated church and one in which the occupants run great risks of either a headache or a cold, and it is safe to say that he will have doubled his usefulness.

The daily or weekly newspaper is also doing effective work in diffusing sanitary information in this country. A collection of the various articles on drainage, sewerage, water-supply, and other matters relating to public health, published in the news or editorial columns of such journals during the year, fills several large volumes.

At first sight an examination of this mass of matter might lead one to think that as an indication of progress it is a little like the register which the ingenious Irishman obtained from his gas meter after he had put it on upside down, and so managed to bring the company in debt to him at the end of the month.

From nearly all the great cities come complaints of impure water, of insufficient and defective sewerage; of trouble with the system of garbage removal; of dirty streets; over-crowded and ill-ventilated schools, and of local outbreaks of preventable diseases; but it is probable this is due rather to an increase of knowledge of the evils complained of than to an increase in the evils themselves.

While much of the cheap and easy declamation about sanitary matters, which is so prevalent, is of the nature of an advertisement, yet the froth and scum show that there is a current beneath, and to a great extent show its direction. Slowly but steadily there has arisen, and is growing, a belief that much of our sickness and death is preventable; that we ought to be able to make our cities as healthy as the country; to lengthen the average duration and increase the comfort of human life; and from people of all conditions, capitalists and laborers, from the mills and workshops of the North, the crowded streets of our great cities, and the low-lying malarious prairies and swamps of the West and South, comes to the educated and thinking men of the country—to the engineers and lawyers and legislators, as well as to the physicians—a demand to put away these plagues which consume our children.

To meet this demand requires knowledge and labor; and here surely knowledge is power, and without it much of the labor must be misdirected and in vain.

Our knowledge of the causes of disease is confessedly fragmentary and imperfect. It is easy to speak of foul air and foul water in this connection, but our ideas as to what constitutes foulness are as yet far from clear. Drinking water contaminated with organic matter, or even with sewage, does not always produce disease—that is immediately perceptible—if it did, the majority of our villages, both North and South, would be hospital camps; breathing foul air, sewer gases, etc., is not surely morbific; if it were, the inhabitants of our great cities would be a race of invalids.

We do not know why the fever spreads one year like fire in the dry

grass, while in another year it is confined to one or two limited localities. We do not know why, of late years, malaria has been steadily increasing along the New England coast, nor why it alternates with typhoid on the mountain sides of North Carolina and Virginia.

When I say we do not know these things, I use the word "know" in the scientific sense, as conferring the power of predication.

Every one who has made personal investigations in such matters can readily recall instances where apparently vigorous health flourishes in spite of the most insanitary surroundings, where he has seen strong and ruddy children playing in the filthiest alleys and houses, where he has found children packed in close school-rooms, almost like sardines in a box, and has been unable to prove that any marked effect on health has been produced, and where men have lived to a ripe old age in spite of the habitual use of alcohol and the most indigestible foods, and of reckless exposure and dissipation of all kinds.

It is little wonder that men who are not well trained in scientific methods of thought should, on meeting with these exceptional cases (for although numerous they are exceptional), be disposed to deny that there is such a thing as sanitary science.

So far as personal hygiene is concerned, each man must, to a great extent, be a law unto himself, and learn by personal experience what to do and what to avoid, though the experience often kills him about the time the lesson has been acquired.

The young man in good health and spirits, who hardly knows that he has a stomach, has a sort of good-humored contempt for those who advise prudence as regards tobacco or liquor, late suppers, etc., and is inclined to think that his mentors "would, if they could"—in which he is not always wholly wrong, for it is one thing to preach and another to practice. From another point of view it may seem that we have little or no power over the causes of disease, and that, as Parkes suggested, it may not be intended that man should be healthy. This is going back to the old Greek Fate Avajky, Vaimovcov.

The foundation upon which all science rests is the belief that like causes under like circumstances produce like effects.

"THE CURSE CAUSELESS SHALL NOT COME."

We do not believe that disease comes by chance, or by the intervention of special providences, but in accordance with fixed laws, and we are by no means disposed to fold our hands in a despairing nihilism. "Do not let us devote ourselves to the Fates while we yet may have hope in the Gods."

We do not know much, but we know some things—enough certainly to make it clear that we can know more, and that sickness and death are due to the same things and forces which, rightly used and guided, will produce fertile fields, and length of days.

And we know enough already to be able to improve greatly the sanitary condition of many places, if we could only get this knowledge applied. The majority of our cities are blundering along in a purblind and perfunctory sort of way, doing much bad and wasteful work, spending large sums to bring water into each citizen's house, but making no provision to remove this same water after it has been made foul by use, thus compelling dangerous air and soil-pollution; building sewers on improper plans, and with no sufficient considera-

tion as to the future extension of the city, after making them little more than long subterranean cesspools, generating offensive and dangerous gases, and so locating their outlets as to contaminate the water-supply of their neighbors. They will spend millions on marble city halls and civic displays, and yet withhold the few thousands necessary to provide properly lighted and ventilated school-houses for their children.

And so I might go on with a catalogue which is sufficiently familiar to most of you, and whose iteration would be as wearisome to me as it would be to yourselves and to the public.

Cassandra, the unfortunate daughter of Priam, doomed to foresee the coming evils, but powerless to obtain belief in her predictions, or to induce effort to avert the impending storm, is a type in more ways than one of the educated sanitarian of to-day. Yet the cry of "wolf" may be raised so often without sufficient grounds that the public will become indifferent. It does not easily distinguish between the voice of the really skilled scientific man and the echoes of the pseudo-sanitarian and alarmist, and in this branch of knowledge, as in those spoken of by Goethe, "the voices are few though the echoes are many."

"In natural studies, as in art, an exaggerated demand brings forth a supply of an inferior article, which swamps the superior, creating a risk of drowning science in its own popularity."*

So far as care for the public health is concerned, that is the endeavor by united effort to secure pure water, air and food, to prevent accumulation of filth on or in the soil around our houses, and to stop the spread of the self-propagating diseases, the larger part of this country is in only the first stage of civilization.

As a rule, it is only in large cities and their suburbs that any practical effort is made in this direction—that taxes are levied, and the sacrifice of certain individual interests demanded to preserve the health of the mass. But silently there is growing among the people an opinion that these things are important; an interest in the discussions as to what is best to be done, based on the conviction that certain diseases which cause much sickness and death amongst us can be prevented, not by individual but by conjoined effort.

We have not yet got so far as to take it for granted in case of an epidemic of typhoid fever, or diphtheria, of small-pox, or yellow fever, that some one must be to blame; that there has been either negligence or positive misconduct on the part of some person or persons, who must pay the penalty. No doubt this may come in time, and such penalties may be enforced, not only by municipal authorities against individual citizens or corporations, but by the State against cities. It is not only useless, however, but positively injurious to the cause of public hygiene to urge legislation in this direction faster than is demanded by the mass of the people and the business interest of the country.

The whole matter of public hygiene involves a conflict of interests (a conflict which is often apparent rather than real, it is true), and when a city or State takes really effective measures to prevent dis-

*Br. & For. M. Chi. Res. 1873.

ease, dissatisfaction and opposition on the part of some person or persons who are interfered with will very soon be manifest. The public interests are usually vague, far-away things to a man until they become private interests; also until his personal comfort or income begins to suffer.

It is proverbially difficult to appreciate the direction and strength of the currents of popular opinion, or how far it may be relied on to support a given course of legislation, as most politicians know to their cost, and hence it is always a little uncertain as to how far the people are desirous of having really skilled supervision of the public health.

In the atmosphere of this Association it may seem as if the matter is very clear, and in listening to the papers and discussions one might suppose that there was no doubt whatever as to the desirability and economy of health officers or Boards of Health, municipal, State and national, and that public hygiene would be a better issue to make than public finance.

When, however, the sanitarians come before legislatures with their propositions, they find that the matter is not so simple and self-evident as it appears upon this floor. Not that they will find any one denying the importance of the public health, or the desirability of scientific investigations into the causes and means of prevention of disease; certainly not; but they will hear a good deal about liberty and monopolies, and economy, and they will find a good deal of opposition to the particular method that is proposed.

There is a good deal of truth in Dr. Le Conte's remark "that upon no class of minds has the progress of contemporaneous science had so little influence as upon the legal, and no kind of business has been so slightly modified by its influence as legal procedures." Also, we know by experience that when the sanitary fat does get into the political fire, there is a terrible sizzling, and the result is often disastrous.

In conversations with prominent health officials, I find that their difficulties and troubles may be placed in two classes:

The first are those connected with the fact that they cannot make a living by devoting themselves entirely to sanitary work, as they would like to do; that there is not sufficient demand for thoroughly educated scientific men as health officers to give such pay for their services as they require, and that therefore they have to do other things—to practice medicine, etc. Another feature of this discouraging prospect is the uncertainty of tenure of office owing to political changes, and it is this mainly which prevents young men of brains and education from taking up sanitary work as a permanent profession. This, however, is merely one branch of the vexed question of civil service reform, and I do not propose to discuss it. I will only say that no health officer in this country who is required, or ought to be required, to devote his whole time to sanitary study and work, and who is qualified for his post, receives one-half the compensation which he could earn in other professional work.

Those who have done the best work in public hygiene have not reaped corresponding pecuniary rewards, nor is it to be expected that in this sense the study of sanitary science, or the fitting one's

self to act as a public official, will pay the individual. You must work for other people's benefit, for people who will object to and grumble at your work, and resist, as far as may be, your efforts to add to their health and comfort, while preventing them from interfering with the health and comfort of others. "Sic vos non vobis," and unless you like the study for the sake of the study, and the work for the sake of the work, you will not continue long to make sanitary science and art your principal occupation.

The second class of discouragements which beset our sanitarians relate to the doubts and uncertainties connected with the subjects of their study. To some of these I have already referred, but I wish to allude more especially to the difficulty in learning whether a community is healthy or not—in other words, to the uncertainties of vital statistics. The more experience one has in collecting and tabulating such statistics, the more doubt one is apt to feel, not only as to their accuracy but as to the possibility of making them accurate.

This applies especially to the causes of death, for in about half of the cases probably no three physicians would, without consultation, certify precisely the same cause of death. A leading physician and sanitarian told me the other day that he thought that in three-fifths of all cases of death certificates, the certifying physician hesitates between at least two and often between three names for the cause of death, and is as likely to insert the one as the other.

But if this is true as to the cause of death, what shall we think of the prospect of being able to obtain a complete and reliable system of notification and of registration of disease? Yet it is to such a registration that every sanitarian looks forward hopefully as a means of giving scientific precision to his work, and without it it is difficult to see how we can measure the effects or decide as to the relative merits of different sources of water-supply or different systems of drainage, sewerage, etc.

In this connection I would specially invite the attention of the Association to the attempt which is now being made under the auspices of the National Board of Health to secure a uniform nomenclature of disease, and a uniform system of tabulating mortality statistics. The matter is one of great interest and importance to sanitary science, and the Association should use its influence to secure in every State a reliable registration of births, marriages and deaths, and the publication of the results of this registration in such a form that they can be readily compared with those of other States.

Within the last year or two there has been a great increase in the number of local health authorities, usually in the form of Boards of Health, each composed of several very estimable gentlemen, often having very vague ideas as to what they ought to try to do, and with very little power or means to do anything except, perhaps, to establish a local non-intercourse quarantine. I wish to make one or two suggestions to such organizations as to methods of commencing work.

The first thing to be done is to provide for a registration of deaths, which can best be secured by a law or ordinance to the effect that in every case the head of the family, or the householder, shall make a return of the death, and obtain a permit for burial or removal of the body, and that failure to do this shall be taken as evidence of suspi-

cious circumstances connected with it sufficient to warrant the action of the coroner.

The second thing to be done is to take an account of stock, by making a sanitary survey of the place, and putting on record the condition of each set of premises. The health officer of a place should have in his possession a brief description, from a sanitary point of view, of every set of premises in a city, and a person proposing to buy or rent a dwelling-house ought to be able, on the payment of a proper fee, to obtain a certified copy of the sanitary history of the house he proposes to occupy, its connection with sewers, the number and causes of the deaths that have occurred in it, or in the square in which it is situated, etc., just as much as he is able to obtain a record of title. With a careful sanitary survey as a basis, it would not be difficult to keep up this record.

It should be distinctly understood that I am not proposing that the sanitary department shall give certificates of "health worthiness," or opinions as to the healthfulness of the premises. The possibility of such certificates has been recently discussed before the London Society of Arts, the great objection being that in old houses it is so difficult as to be almost impossible to make such inspection as would be necessary for this purpose. What I propose is a record of facts and not a certificate of opinions.

If a newly-formed health authority will do the two things I have mentioned, I have no doubt of its success, nor will it need any further directions as to subjects for work.

For several years I have been comparing the results of the work of municipal health officers, as contrasted with that of municipal Boards of Health, both in this country and Europe, and I think that in the great majority of cases the single officer succeeds better than the Board. Where the health officer system fails, it is often because the officer attempts to continue to practice his profession and perform his sanitary duties.

It is not desirable that a health officer should be a practitioner of medicine, for if he is he can hardly avoid the distrust and dislike of his fellow-physicians if he does his duty, nor can he be expected to be as severe on the nuisances due to his wealthy and influential patients as on those of others.

The great administrative problem, says Mr. Chadwick, is to unite interest with duty, corroborating Jeremy Bentham, who says, that "in the ordinary tenor of human life, there is a general habit of self-preference which is not a reasonable cause of regret, but is an indispensable condition to the well-being of man. Here and there may be found a man who will sacrifice self-interest to social interest, but such men are not more frequent than insane, and it is in what has place in the conduct of the thousands, and not in the exceptional one in a thousand, that all rational and useful political arrangements will be grounded." All this we may grant, and must remember when we come to permanent organization for sanitary work, but it does not hold true for those who inaugurate the movement—the pioneers in sanitary reform.

As I have already said, their personal interests will almost surely suffer, yet none the less do they lecture and write and labor, to cor-

rect the evils which they see around them. "Like Saul, the son of Kich, they go forth to find their father's asses, and they don't have to hunt long."

It may be proper here to refer briefly to sanitary associations auxiliary to local Boards of Health. It is unnecessary to point out the utility of such organizations. They can often in fact, do much more than the health authorities which they aid, not only because they have more money, but because they have more influence with the press and the people than the officials, and can do things which the health officer would hesitate about undertaking lest he should get into a quarrel with some other branch of the city government, or be accused of wishing to act the despot by some of the unsuccessful candidates for his office.

Health officers and health boards often look on these self-constituted auxiliaries and critics with a great deal of distrust at first, and think that if they could only control the expenditure of the funds of the association, they could do a great deal more good than the association does. All this is natural enough, but it is not wise. The auxiliary association must go its own way, and it must preserve its independence or it will soon lose its power.

If the health officer is a man of good sense he will find such an association of powerful help, and will promote its formation and work by every means in his power.

Our last two meetings, at Richmond and at Nashville, were generally recognized as being held in important emergencies, and their deliberations command widespread attention.

The present meeting is also an emergency, which is the more important since it is not recognized by the public.

The emergency of the sanitarian comes, in fact, just at the time when the public sees no danger and no necessity for doing anything.

During the past year the country has been prosperous, the crops large and finding ready markets, the furnaces and looms and shops of all kinds active; we have been free from war and from great epidemics, and although a hundred thousand deaths have occurred among us which might have been prevented, and two hundred thousand of our people have been constantly sick, and suffering from causes which we have every reason to believe might have been avoided, yet this great loss and sorrow have been so distributed among our fifty millions of people that it has for the most part been lost sight of and has not attracted attention except in a few scattered instances.

When the times are thus prosperous, the streets of our cities noisy with traffic, their depots and docks and levees crowded with freight, taxing to their utmost the capacity of their cars and ships, it is not easy to induce people to take thought of the evils to come, nor are they disposed to listen with satisfaction to those who trouble their content by urging on them drainage or sewerage, or other costly works needed to secure dry, clean soil, pure water, and air free from dangerous or offensive contamination. They say to the sanitarian who is warning them: "Hush! wait a little; don't make a fuss; you will injure the reputation of the city; you will drive away commerce; we are no worse than our neighbors, nor than we have been before;

we will attend to these matters bye-and-bye, for you are probably right in your advice; but wait until after the election; we must not propose additional taxation *now* or we shall be defeated," etc.

It was so of old time: "Yet a little sleep—a little slumber, a little folding of the hands to sleep." "So shall thy poverty come as one that traveleth, and thy want as an armed man; and to the great city which felt that it should sit as a lady forever, there came in one day widowhood and the loss of children."

It is very easy to be cynical over public health organization and administration, not only in this, but in all countries. What is done is so far short of what might be done, the practice corresponds so little with the theory, that there come hours in the life of every sanitarian, when he is inclined to think that it is a waste of time to contend with the self-satisfied ignorance or short-sighted selfishness, which opposes every effort of prevention or restriction of disease. Such moments of doubt and discouragement are, however, by no means peculiar to sanitarians—they come to every man; and it is fortunate for civilization, morality, and science, that they come but seldom and are usually of brief duration. The truth is, as Kingsley says, that the egg is by no means addled, though the chick often breaks the shell in a somewhat cross-grained fashion.

We pass to and fro, through our nights and days, like a shuttle through the web, occasionally catching a glimpse of the pattern which we are helping to weave; but these glimpses are few and short—quite as often on the wrong side as the right; the pattern is very large, and each of our lives forms but a single thread in it; hence it is not strange that it often seems distorted or shapeless, or that we cannot see the effect of our labors.

It is our business, each in his own place, to do the work that lies next at hand for us, and to do it with our might, seeing that there is neither work nor device, nor knowledge nor wisdom, in the grave whither we go.

RECOMMENDATIONS BY THE ADVISORY COUNCIL ON THE PRESIDENTIAL ADDRESS, SUBMITTED TO THE EXECUTIVE COMMITTEE DEC. 8, 1880.

The undersigned Committee, having been appointed this day by the Advisory Council of the A. P. H. A., to present for consideration such action as shall be expedient by this body as to certain points which appear highly important in the annual discourse of the President, Dr. Billings, respectfully submit the following:

Whereas, The statements by the President in his discourse clearly present the demands which sanitary science makes for a complete and reliable system of national registration of diseases and of the causes of death, and also show that such records and the sanitary surveys of places and premises are essential means of successful public health improvement, these recommendations, and also those relating to local sanitary associations, are earnestly commended to the attention of all Boards of Health and to the people throughout the United States. With the design to promote these objects, the following resolutions are recommended for adoption:

Resolved, That the best interests of sanitary science and the public

health service require that the faithful registration of vital statistics, and especially the correct notation and registry of causes of death, together with a public record of prevalent diseases, should be maintained throughout our country; also that wherever there are Boards of Health, such Boards should require that the records of epidemics and other prevalent diseases, and of mortality, shall be correctly made and registered, all State and local Boards of Health and urge upon other public authorities, the medical profession and all members of this Association, to do whatever they can to promote such uniformity and thoroughness in the notation and registry of diseases and causes of mortality.

Resolved, That the American Public Health Association recognizes and earnestly commends the efforts of the National Board of Health to secure a practical basis of uniformity for the notation and nomenclature of diseases and causes of mortality, and again urges upon all State and local Boards of Health and upon other public authorities, the medical profession, and all members of this Association, to do whatever they can to promote such uniformity and thoroughness; to have this subject under consideration for the purpose of reporting progress and plans relating thereto at the next Annual Meeting, and for co-operation with the National and State Boards of Health, and with the medical and statistical bodies that have this subject under consideration.

Resolved, That sytematic sanitary surveys and inspection are essential aids to successful public health works and to the progress and application of sanitary science. Therefore, this Association would urge upon State and local authorities the importance of such sanitary surveys, and the sanitary maps and records that pertain thereto, and also would recommend that the registry of prevalent diseases and of mortality be as frequently as practicable so co-ordinated therewith as to disclose the preventable causes which need to be removed.

Signed, on behalf of the Advisory Council, as its committee,

ELISHA HARRIS,
HENRY B. BAKER,
JAMES A. STEUART.

Recommendation adopted.

WHAT THE STATE OWES THE PEOPLE—PUBLIC HEALTH IS PUBLIC WEALTH*.

By HON. ERASTUS BROOKS, of New York.

That "the world is governed too much," is a maxim that may wisely be accepted by both the people and the government; and especially is the maxim true in a republic like our own, where the people, when notified of their duty, are reasonably considerate and intelligent. The declaration of independence, the constitution of the United States, and the constitutions of the several States, all begin with

*Read before American Public Health Association, New Orleans, December 9, 1880.

some reference to the people's rights and welfare. The great object of government is the diffusion of knowledge, and the enactment of laws for the regulation of States, communities and persons, and among the first of these duties are provisions of law for the safety of the people. To secure "life, liberty, and the pursuit of happiness," is a principle of government older than the constitution, and as such it was embodied in the first record of our national existence. It is safe, therefore, to say, in the beginning of what we have to present to the American Public Health Association, that there can be no real life or happiness where the public health is not provided for by law; and that the State is only in the discharge of one of its first duties, when it seeks, under reasonable laws, to maintain the chief end of its existence.

In the Congress of the United States, and in the legislatures of the several States and Territories, it is exceptional to find members of the medical profession. Here and there, it is also true, only are found men who unite an interest in the political and physical welfare of the State. In a certain way we all seek that "good digestion which waits on appetite," looking for "health on both." But far more than in what we eat and drink, and put on and off, we digest our words and thoughts. Our laws are digested, and have been from the order of the Roman Emperor Justinian, now nearly 1,400 years since, to the present time. In food for the body, as in light and air for the abodes of men, the work to be done is to arrange, classify, dissolve and distribute, whatever in the one case is nutritious, from whatever is otherwise; and in preparing, if I am correct, whatever is put into the stomach for conversion into blood and into chyle or chyme; and in the other case, the work to be done is to arrange, classify, work over and distribute for the use of others, whatever is necessary in books and letters for the instruction of mankind.

For more than forty-five years of my life, as proprietor, editor and legislator, I have been engaged in the second class of this kind of work. To most of you belongs the more important work which may be presented in the three aspects of reducing the mortality among the people at large, of saving the people from physical pain, and of curing the sick. If to do all this is not to make "a voyage of discovery," and "a circumnavigation of charity," then no such voyage can be taken in the journey of life. I can recall no work of equal value, nor any kind of labor calculated to promote so much human happiness.

In political governments the people are bound to seek and to enjoy, if they can, their political preferences for principles and for persons. Whether in majorities or minorities, one side will govern and the other side will obey. The two sides are essential to the welfare of the State; but while this is true, there are in all States and communities, unities and necessities, still more essential for the public good, and upon which there can be no safe divisions of opinion as to the proper uses of the authority of the State. We may have diversities of opinion as to the causes of diseases, remedies for their cure, —as to climates—and exposures, as to habits of living, the safety of buildings, the best methods of drainage, sewerage and ventilation in dwellings and work-shops; but science and experience will in time solve all these differences into one practice or system, while in all that

belongs to duty to be performed, or to culpability for neglect of duty commanded to be done in questions relating to the public health, there can safely be no divided counsels.

I place the subject of health as among the first, if not the very first, in the science of political economy. It is a question which belongs to the wealth of the nation and to the prosperity of the people. The man or scientist who is capable of discovering or curing disease, and whom by custom we define as a physician, is, in the established meaning of words, an experimentalist in physics, and a natural philosopher. The doctor, in brief, is a person recognized in law and practice as one skilled in the art of healing the sick through the agency of proper medicines, and it is this healing of disease in its effect upon communities which covers and governs a material fact in political economy.

We know what ravages yellow fever has produced in this country and in the world, how many lives it has destroyed, how much misery it has produced and distributed, and how much wealth it has diminished. The lessening or removal of the prevalence of this great calamity has been partly the work of physicians, and a large share of it belongs to the nursing of liberal and intelligent men and women. This work, often a volunteer service, was inspired by the noblest motives, and has again and again, and especially in this section of the country, produced the grandest results.

The State politically, but not in the sense of party politics, and the people personally, in every sense I need not say, have the deepest interest in what is called State preventive medicine. Disease among a large class is often but another name for poverty, pauperism, orphanage and bankruptcy. In Philadelphia in 1871–72, some 4,500 people perished from small-pox. The reported loss in business there at the time, and from this disease, was $16,000,000, besides a cash value in human lives of $5,000,000 more. New York City was also a great sufferer at the same time and from the same cause, while Baltimore, Boston and Providence and other cities resisted the disease and prospered greatly, owing to a timely and thorough vaccination of the inhabitants.

The State imposes certain qualifications not only upon dealers in drugs, but upon physicians, before they can practice in the great art of prescribing suitable remedies for disease. A more important State duty is the enactment of wholesome laws to prevent disease. This is done without infringing upon the personal or political rights of any citizen.

The first duty is to remove the cause of all pestilences and epidemics, foreign or domestic; and where these unfortunately prevail, the second duty is, by vigorous administrations of proper laws, to prevent their spread and put an end to their existence. When the pleuro-pneumonia came into the United States from Holland—once the great depot of this disease in Europe—and when, to an alarming extent, it was carried into England, the realm, the State and the Federal governments did not hesitate to act forcibly and promptly for its removal. Holland, profiting by experience and energy, reduced by inoculation the disease to one or two per cent., and finally stamped it out. If Massachusetts and other States have accomplished a great

work in preventing the lung plague in cattle, what ought not all the States to do in preventing even a worse disease in men, women and children? To a woman of Massachusetts is due the honor of suggesting the first Board of Health in the United States. A decent care for the people by the State and a decent respect for the government by the people establishes reciprocal relations which no party can neglect. The lives, health and happiness of all classes of citizens depend upon these mutual observances of duty; and hence the existence of State Boards of Health, all created by law to present, discuss, and enforce obedience to the laws passed. The law, in all its provisions, is for the common good. It is a simple application of the science of medicine in the form of remedies or preventions to the people of the State. It teaches mankind not only the inestimable blessings of light, and air and water, of ventilation and drainage in dwellings and places of business, but the absolute need of the best use of these great gifts in nature, chemistry and discovery.

It is demonstrated in the city from whence I come, by the President of the City Board of Health, that thousands of young lives have been saved yearly for ten years and more by the enforcement of health laws passed by the State. Recent laws relating to the tenement houses will impart great comfort to their poor occupants and add largely to the number of lives saved. The death-rate of the city now numbers between 20,000 and 30,000 each year, and one-third of this number of lives could be saved if the health laws could be enforced. Eminent physicians, verbally and in their written reports, assure me that one-third or more of the prevailing sickness in town and country could be prevented by the observance of sanitary laws. Mr. Edwin Chadwick stated three years ago, to the British Scientific Association, that both the sick and death-rate had been reduced one-third by the practice of sanitary laws, and that the death-rate in the old districts had come down to sixteen or seventeen in each thousand deaths; and he declares that in new districts, with no overcrowding, and with a proper supply of water and surface cleansing, that the death-rate can be reduced to ten in the thousand, which is nearly two-thirds less than the mean death-rate among the general people.

More remarkable than even this encouraging promise, but resting upon the common sense rules of fidelity in public service—and adding, perhaps, a becoming sympathetic interest in the happiness of mankind—is the statement that in well-governed institutions for children between the ages of three and fifteen years, the death-rate can be reduced to two-thirds of the number generally prevalent, or to three in each 1,000 children, and with a corresponding immunity from all common epidemics. Even in the British reformatory prisons, by the careful use of preventive medicines, the death-rate has been reduced to three in the thousand, with a general exemption from diarrhœa, dysentery, typhus fever and eruptive diseases. The diseases belonging to the respiratory organs are also reduced by care to one-half.

The cholera epidemic which prevailed in England in 1832 frightened the people there into the necessity of securing more of the decencies of life than had before been enjoyed. The panic of a scourge, like most other panics, prompted many of the people to put on their thinking caps,

and from the consequences of the cholera came, in the course of ten, twelve and fifteen years, valuable government reports and laws. These laws, if Dr. Bowditch be correct, are in advance of the laws of all other countries; and one man, Dr. Farr, has been the bright particular star in this work of sanitary reform, not only for Great Britain, but in many other parts of the world. If disease spreads by contagion, so also good example and benevolence inspires imitation and secure their reward. The great pioneers of the world in discovery and work have proved its greatest benefactors, and to the good beginnings at home and abroad we owe to-day the existence of twenty-four State Boards of Health in the thirty-eight States of the Union, and all these have been established within twenty years. Lord Beaconsfield spoke the truth for his own country when he said, as Prime Minister of England, three years since, that "the health of the people is the first duty of the statesman." This sentiment is at least equally true in a country of such enormous proportions as our own, and daily increasing, not only from its own inherent growth, but as the destined home of so many millions of people in the old world.

The government and the States are not asked for what so often excites and thrills the body politic by the possession of place, patronage and power, but simply to engage in the paternal works of saving the lives and promoting the health of the people. The appeal is to the common sense and practical humanity of members of Congress and of the Legislatures of the States, some of whom, as in Mississippi, Alabama and Texas, have already performed a work of moral and social importance, not only to the people of their own States, but in the way of example to all non-acting States. The motives for the needed work are the highest of our best natures, "since the greatest good of the greatest number of the people" is all that is asked.

If, when governed by such considerations, the people refuse to act, the law here as abroad must take its course, and penalties imposed for its violation. Nor is it enough, as expressed a hundred years ago and more by Edmund Burke, that "men *mean* well. It becomes them to do well." You are asking nothing new of States. Centuries ago the republics of Greece and Rome had their sanitary laws, and the argument then as to-day, as a part of the important work of the period, was that physical culture would secure physical health. The old Romans had their systems of ventilation, drainage and sewerage, their splendid aqueducts, baths and pavements, and all of them promoted the comfort, convenience and health of the people. Sanitary law also was a part of the Mosaic law, and in practice better at times than the customs in very many of our own American towns and cities in the closing years of the nineteenth century of the Christian era.

Among the lost arts and blessings of mankind unfortunately were the lost codes of laws relating among other things to the public health. The code of Justinian and the laws of Lycurgus, with laws for justice and health, went into decay, and for a thousand years and more books and learning, and in a certain sense, deeds of practical charity, were confined to the monks. It was long a forgotten lesson among general teachings that "cleanliness was next to godliness," and therefore a very close neighbor to all kinds of practical piety. Hence,

and clear up to and far into this nineteenth century, came agues, malaria, small-pox, cholera, scurvy, plagues and pestilences, and all the inherited ills of life to which, from negligence and ignorance, flesh and blood are exposed. Happily for the world public opinion is now aroused in the interest of the public health, and the subject reaches us to-day in the three-fold form of economy, thrift and morals.

If, as alleged by way of criticism, the health service is costly, it can be proved to be the best possible investment to meet the cost. We begin in the New York State Board this year with an appropriation of $15,000, and it may be more or less hereafter. The City Board of New York asks for the year 1881 the sum of $253,363, and it is money so well invested that in buildings, institutions, in saving health and lives, it will save more money to the city, in income and taxes, than any investment of the most skillful financier in Wall Street. If to this result the money value of life is counted, the five or six thousand lives yearly saved will run into some millions of dollars. In Great Britain they place this kind of value upon human existence, just as we say in the United States that the cash value of every able-bodied immigrant from the Old World is $1,000. There Dr. Farr—perhaps the highest authority in the Old World—placed, in his reports as the registrar-general of the government, the money value of each man, woman and child in the United Kingdom at $795. The neglected preventable deaths in England and Wales during the school period, apart from infant mortality, makes a loss to the State of $95,000,000! The British life insurance companies and friendly societies also give the money value of work lost by sickness. For every death there were, as proved on careful investigations by the government, two persons always sick and disabled, thus making a loss for each death of 730 days in each year. This result is reached by placing the minimum of the entire population at the sum of $795 here named, and to these figures are added 50,000 lives lost annually in the school age in England and Wales, which might be saved. But such statistics are exhaustless, and I must soon leave them for more practical conclusions.

In considering the subject of State law and personal work it will be wise to recognize the principle in regard to disease—especially is this true in cases of quarantine—that it is not places, but *principles*, which secure public health. This rule applies alike to the ship, the shop and the home. Ship fever under proper treatment and practice has become what Dr. Vanderpoel has called almost a mythical disease, and by simple cleanliness it is now easily mastered.

Cholera, though not mastered by being stamped out in the same way, is often under control, and its spread into towns and States, and along the coasts and rivers, can be prevented. It always comes from importation. Importation, if need be, can be forbidden, and by law and care its spread, if it should come, can be prevented. When in 1832, 1848-49, 1854, 1865-66, it entered the United States and Canada, it traveled as fast as travelers could be borne by steam to the far West, and left its footsteps of sorrow all along the road, from New York and Quebec. So also in 1848 it entered New Orleans from Havre, and forced its way all along the Mississippi, reaching towns and cities 1,000 miles apart, and, surviving the winter, it pursued its

ravages over land and water in 1849–50. Had the United States, or Louisiana alone, possessed powers given them under existing laws, no such disaster could have occurred.

Sanitary laws properly executed, I need not say in this place, have prevented and can prevent the spread of cholera. The law, however, must be supreme, and not only supreme, but cover districts, precincts, towns, counties, States and governments, even to the interposition of international authority. There must be the *cordon sanitaire*, as along the vast frontiers of Russia, and maritime law in the hands of faithful officials, and these officials must be sanitary officers, as we have seen them upon the Red Sea and the Mediterranean, at Medina and Mecca, keeping back and pushing forward the hundreds of thousands of Mussulman pioneers, who, but for the law and its vigilant observance, would bear disease and death wherever their footprints are found.

What John Stuart Mill calls "the limits of the province of government" we must agree, whether spoken of the State or of the citizen, excludes no good work. It may and should exclude all those needless forms of non-intercourse common to the middle ages and to later periods of time, and all oppressive methods of administration, as when petty despots govern the people; but whatever is needed for the absolute good of the people in establishing and maintaining the public health must be done. If the law is a bad one, repeal it because it is a bad law, or amend it until it becomes wise and timely. In New York we have a compulsory law requiring vaccination, but it is a dead letter except in a single city, and vaccination is generally reduced to deeds of charity or to simple individual volition, even when the public welfare requires obedience to the public statute. It is the cost to the State that some people complain of, but as a question of State economy I hope I have removed this objection. The real State cost in all the United States at present is less than $5,000 for each million of inhabitants, and the saving covers the cost ten times over. The civil war destroyed 600,000 persons. Sickness wastes more than war—20,000 a year in London and 120,000 in the United Kingdom, and if recorded figures from medical men are true, 700,000 years of individual human life are yearly lost by preventable neglect among the 5,000,000 of people in the State of New York, and 70,000 years of human life are also wasted every year there by sickness, and New York is no worse off than other States of the Union. These lives fall short ten years each of what they should be. So in England, also, we read the important truth, that in the healthy districts of the kingdom persons who reach the age of twenty years pass on to the good old age of three score and three years and nearly a half; while in the general districts death comes within forty-five years. The annual money loss of this single death record, coming from ignorance, neglect, and crime, is stated at nearly $50,000,000, besides the loss from impairment of health and from poverty among those not positively dead.

When it is known that in small-pox, isolation and vaccination provide a certain cure for a loathsome disease, the existence of which is concealed where it notoriously is, the law or its officers are at fault. When it is also known that bad air produces bodily and mental disease, and that proper ventilation, heating and water supply are reme-

dial measures, it is the duty of the law put in practice to point out and remove the evil. The law, in some of our cities at least, prescribe where houses shall be built, of brick or stone only, and if it is a wise law may not the construction and drainage of dwellings and workshops also be regulated by law? Mr. Edwin Chadwick says that by following out a correct principle three houses may be well drained at the present cost of one, and Mr. Edward Atkinson, also good authority, declares that unsafe buildings cost more to construct than fireproof buildings. It is proposed in England to guarantee dwellings as safe to live in on the score of health, and simply by evidences of proper construction and drainage. When sewer gas poisons the blood and produces dysentery and malaria in other forms, who shall condemn any proper law intended to prevent poison and self-inflicted murder? So in regard to adulterations of food. Take, for example, the simple article of candy, much of which is reported to be made from grape sugar, glucose and terra alba; the latter being sold at one cent a pound, and the former at four cents a pound, where granulated sugar costs, by the barrel, ten and a half cents—the cheaper candy may be impaired by impurities from fifty to seventy per cent. It is a public duty to resist all impurities, both in the food we eat and in the contaminated air we breathe; in all dwellings, and all workshops, and in all that is around them; and let me say in speaking, alike for the State and citizen, that *obsta principiis* is the only safe rule of action.

This subject addresses itself to the hearts, minds and bodies and estates of every man and woman in the land. The real wealth of a nation is counted not in mines of gold, silver and coal, nor in the more useful metals of iron, lead, copper and tin; nor yet in the millions of acres of land cultivated by between five and six millions of our people; nor in the work produced by half this number of persons employed in the manufactories and workshops of the people; nor yet alone in the treasures brought up from the depths of the sea, or borne upon the two oceans which surround us; nor from or upon our grand lakes and large or limited rivers. These are vast, grand and stupendous sources of material wealth and of physical greatness. But, as far above them all as the heavens are from the earth, as a simple question of value, is the general health of the people. Here alone is true manhood, real civilization, contentment in life, peace and rest in the family, pervading happiness and substantial good-will among men. Here alone the personal man is the temple of the undying soul, and only the purified abodes of men are fitting habitations for this vital principle.

'We sum up, in conclusion, the duties of the Federal Government and of the State in the following order:

First.—Supervision over the health of the entire people; peaceably if it can be done, forcibly if necessary. Where the Federal Government has authority, as upon the sea, lakes, rivers, over forts and arsenals, over the army and navy, in the legislation for commerce, international and internal, especially in regard to infected vessels, over animals exported and imported, this authority belongs to Congress. It has been proved, I think, after the most laborious investigations for nearly two centuries past in this country, that the epidemics appearing

among us have been traced to importations. If epidemics in this and other gulf cities seem to disprove this fact, the seeming exception is due to the bad sanitary condition of the localities named, or to the fact, as stated by Dr. Vanderpoel, to the germs of disease concealed and dormant in some cellar or room not reached by the purifying air of heaven in the place where the disease exists. The port of New York, for four months of the year, has been as much exposed as New Orleans to yellow fever, and it has been kept away from New York, not by any system of non-intercourse, but simply by the practice of correct principles of quarantine by vigilant and capable officers of the State.

Second.—State governments are clothed with power over the health of the people within the commonwealth and over all the territory where the Federal government is without jurisdiction. The colleges and schools of the State, its institutions of charity and learning, its prisons and reformatories, its codes and laws, all that belongs to roads, avenues, parks, canals, docks, piers and even to public and private dwellings, when legislation is needed for health, belongs to the parental care of the State. Epidemics are to be treated like public enemies, and often they are worse than armed foes because more insidious and beyond observation. They come in foul sewage, polluted streams and corrupted wells of water. They come also like a thief in the night and steal away those jewels of the household, the little ones, whose lives are more precious than all the wealth of the State. To prevent adulterations in food and drugs—not practiced I hope and believe to the extent reported or suspected—is another of the State duties. To clothe boards of supervisors and trustees in towns and villages, and mayors, common councils and health boards in cities, not only with ample power in regard to health, but to require them to pass and enforce ordinances, is a positive duty of the State. A State department of health is essential to secure these results, and in its actions it must be impartial, effective, vigorous, determined, and take no step backward.

Third.—While Federal and State governments are bound to do what is here suggested, a higher law or duty rests upon the women of the household and upon faithful men of business. When a woman suggested the first Board of Health in the States, the appeal only came when a typhoid fever was discovered in a seminary of learning at Pittsfield. The State cannot secure obedience to law without the sympathy and co-operation of the people. Light and air, cleanliness and order, are the great preservers of health, and the wives, mothers and daughters, as the necessary mistresses of our dwellings, can best serve the State when they secure the greatest possible health in their own homes. Dr. Farr prescribes the right remedy when he says, that "health at home is health everywhere," and when he adds as his conclusion from experience that "the whole future sanitary movement rests for permanent and executive support on the women of the country." If it be true, as stated by the President of the State Board of Health for Connecticut, that "the predisposing causes of insanity in the United States can be traced to malign influence on childhood," no wonder that we have from Dr. Wilbur, of New York, the startling record that there are 50,000 lunatics in the country, nor

that we are behind England, Germany and the age in which we live in our treatment of this class of unfortunate people.

Finally, a word as to quarantine. Commerce cannot be forbidden, but it may be regulated when hurtful to health. At best, however, State law is only a relative guarantee of the public safety. Quarantine and commerce are naturally enemies, and the State must regulate the relation between the two—the State always insisting that, as far as possible, the public health within its borders shall be permanent. Every nation and every State has the right to use intelligent ways and means to preserve health over all its borders, and the Federal Government also has rights which must be respected and laws which must be obeyed. There are natural, legal, wise and conservative lines between nations, States, municipalities and towns. Where the death-rate in England is 19.9 in the 1,000, in Austria 31.3, and close on to the latter number in all parts of Italy, official action is demanded in the name of public safety.

Drawing, then, only the proper lines between nations, States and local authorities as a question of commerce, all in established authority may, under the administration of wise laws, be able to say to Congress for all rivers passing between different States, and for all lakes bordering upon these States, and for the great highways on the ocean touching our American land—

> Bid harbors open, public ways extend;
> Bid temples worthy of the gods ascend;
> Bid the broad arch the roaring flood contain,
> The mole extended break the roaring main;
> Back to her bounds the roaring sea command,
> And roll obedient rivers through the land.

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REPORT OF THE COMMITTEE ON THE PREVENTION OF VENEREAL DISEASES.

By ALBERT L. GIHON, M.D., Medical Director United States Navy, Chairman.

Your committee, to whom was assigned the duty of suggesting some practicable plan for the prevention of the spread of venereal diseases, with especial reference to the protection of the innocent and helpless members of the community, beg to report:

That they have endeavored to consider the question without bias or prejudice, uninfluenced on the one hand by the misrepresentations of certain pseudo-moralists, who have uncharitably denounced in advance their assumed intention to recommend the governmental license of prostitution, and on the other by appeals from no less earnest, honest and righteous persons, who with equal insistence have urged the propriety and necessity for just such action.

Manifestly the first essential to the successful establishment and operation of any system of repression or prevention, is the recognition by the community of the magnitude of the danger it is incurring without it. Diphtheria and typhoid continued to commit their ravages with a sad submission to what was supposed to be the will of an inscrutable Providence until the public learned that their homes were desolated through their own culpable carelessness. To-day sy-

philis lurks in the most exemplary household, defiles the parents and blights the offspring, its very name being unknown to them. Until the public are taught that mere personal rectitude is no safeguard, it is idle to expect that any system will be cordially indorsed. So long as venereal disease is popularly believed to be only the fruit of illicit sexual intercourse, its very consideration will be shunned. The public must, therefore, be enlightened, and your committee beg to remind this Association that this task is eminently its duty, as to the existence in their midst of a disease which is fraught with as much if not more evil to humanity than all other ills of the body combined. The other great scourges of mankind are occasional like cholera, or limited by climatic bounds like yellow fever, or outwardly hideous and terrifying like small-pox; but syphilis spreads its venom invisibly, insidiously, daily, throughout all seasons, in every land, and among all races and conditions of people.

Certain individuals—few of them physicians—have disputed the statement that syphilis is either very common, or so dangerous that it is beyond speedy and permanent cure. In the absence of exact numerical statistics, your committee believe it will be sufficient to refer to the experience of those medical practitioners who have had opportunities of judging, confident that they will, without exception, declare with Parent Duchatelet that "of all contagious diseases to which the human species is liable, and which cause the greatest evils to society, there are none more serious, more dangerous, or so much to be dreaded as syphilis; its ravages far surpassing those of all the plagues which at different times have terrified society;"

With Prof. Gross and Dr. Marion Sims, that "a greater scourge than yellow fever and cholera and small-pox combined is quietly installed in our midst, sapping the foundations of society, poisoning the sources of life, rendering existence miserable and deteriorating the whole human family;"

With Sir Thomas Watson, that "it counts its victims not only in the ranks of the vicious and self-indulgent, but among virtuous women and innocent children by hundreds and thousands;"

With Sir James Paget, that "it would be difficult to overstate the amount of damage that syphilis does to the population, children being born with diseases induced by it, which render them quite unfit for the work of life;"

With other eminent medical men quoted by Dr. Sims, in his inaugural address as President of the American Medical Association, at Philadelphia, in 1876, Sir William Jenner, Prescott Hewitt and Mr. Simon, chief medical officer of the privy council, who have borne testimony of their experience of its ravages among pure women and innocent children.

Statements such as these do not need to be backed by numerical data of questionable value. These can often be distorted to prove any point desired, by selecting for comparison maximum and minimum years, or special returns from certain localities, as illustrated by the array of figures by which the opponents of the British Contagious Diseases Act have sought to prove that the sanitary surveillance of public women has actually augmented the amount of venereal diseases in countries where it is exacted.

At best but a small proportion of the venereal diseases ever appears on vital returns. The true statistics of their frequency are the professional secrets of the physician whose aid is sought to relieve them, or whose eye recognizes them beneath the mask of other ailments. The most carefully-prepared reports fail to exhibit the rheumatisms, the cachexiæ, the cutaneous affections, the defects of vision, the lesions of the spinal cord, the brain, the liver, etc., which have had syphilis for their cause. Especially is this true of transmitted syphilis. Only a few days ago a distinguished American ophthalmologist declared to one of your committee, that the majority of his infant patients were characterized by the oldish features and notched incisors and badly shaped head which mark the syphilitic child, and he boldly asserted that interstitial keratitis is always a consequence of constitutional contamination. The greater proportion of venereal cases stalk about the streets in affected health and never appear on any returns. How many others find expression in suicide, in insanity, in conjugal infidelity and actions for divorce!

As far as figures can be evidence, the statistics carefully collated by Dr. Frederic R. Sturgis, of New York, are worthy of consideration. A summary of the poor treated in 1873, at the various hospitals and dispensaries of the city of New York, enabled him to estimate the total number of venereal and syphilitic poor patients, but this did not include those treated at their homes, often by themselves, at physicians' offices, by apothecaries and by quacks. Notwithstanding these omissions, of 280,536 poor persons receiving aid at public institutions, 12,341 suffered from venereal diseases, 5,045 of these being syphilis; that is, 44 in every 1,000 were venereal cases, 18 per 1,000 syphilitic.

In Mr. Wagstaff's report of the amount and kind of venereal disease under treatment at certain charitable institutions in London, in the year 1868, it is stated that sixty-nine in every thousand patients were venereal, thirty-five of these being syphilitic; and he estimates that among the million and a half of the poor population of the metropolis who receive medical relief for disease at hospitals, dispensaries and at the hands of parochial medical affairs, about one in fourteen is affected with venereal disease of some kind, this not including midwifery cases nor the classes excluded in Dr. Sturgis's report.

During the same year 9,796 venereal patients were treated at the hospitals in Paris, and M. Lecour, Préfet of Police, estimating these as one-fifth of the total number of venereal patients treated at their homes by physicians, and who seek relief at the hands of apothecaries and charletans, gives a sum total of 48,980 cases, about one in forty of the entire population. "A formidable array, and one probably much below the real amount."

The same estimate of the proportion of private to public cases of five to one, arrived at by Dr. Sturgis from wholly different data, would give for New York, out of a much smaller population, 61,705 venereal patients in the year 1873—nearly one in every fifteen of its men, women and children—a number only dwarfed by comparison with London, where one hundred thousand poor alone are annually affected with syphilis.

Military and naval reports, while not free from the same objections of

defective registration and classification, are, however, very much more exact, especially in the matter of enthetic diseases, there being less reluctance to apply for treatment, and less dread of exposure on the part of the patient in a community composed wholly of men, and no alternative but to consult the medical officer, who is required to include them in his returns. Your committee are indebted to the Surgeons-General of the Navy, Army and Marine Hospital Service for the following official returns of the amount of venereal disease treated by medical officers in the naval and military services and mercantile marine of the United States during the last five years:

VENEREAL DISEASES IN THE UNITED STATES NAVY.

Year.	Total Force.	Total Sick from All Causes.	No. cases Venereal Diseases.	No. cases Syphilis.	Per M of Force. Venereal.	Per M of Force. Syphilis.	Per M of Sick. Venereal.	Per M of Sick. Syphilis.	Per Cent of Syphilis to Venereal.
1875.....	10,141	7,832	737	500	73	49	94	64	67.84
1876.....	11,138	7,797	699	424	63	38	92	54	60.65
1877.....	7,641	6,748	527	342	69	45	78	51	63.78
1878.....	7,764	6,873	548	341	71	44	80	50	62.22
1879.....	8,859	10,494	853	490	96	55	81	47	57.44
Average..	9,110	7,949	672	418	74	45	87	53	62.70

VENEREAL DISEASES IN THE UNITED STATES ARMY.

Year.		Total Force.	Total Sick from All Causes.	No. cases Venereal Diseases.	No. cases Syphilis.	Per 1000 of Force. Venereal.	Per 1000 of Force. Syphilis.	Per 1000 of Sick. Venereal.	Per 1000 of Sick. Syphilis.	Per Cent. of Syphilis to Venereal.
1875–76.	White	21,718	32,523	2,262	1,147	104	53	69	35	50.70
	Col'd	2,014	2,971	364	198	181	98	126	67	54.40
	Total	23,732	35,494	2,626	1,345	110	57	74	38	51.22
1876–77.	White	23,383	34,683	2,463	1,283	105	55	71	37	52.09
	Col'd	2,083	3,779	351	170	169	82	93	45	44.43
	Total	25,466	38,462	2,814	1,453	110	57	73	38	51.64
1877–78.	White	20,872	26,398	1,840	954	88	46	69	36	51.84
	Col'd	1,895	3,048	321	146	169	77	105	48	45.48
	Total	22,707	29,446	2,161	1,100	95	48	73	37	50.90
1878–79.	White	21,847	32,814	1,902	835	87	41	58	27	46.53
	Col'd	1,964	3,455	281	155	143	79	81	45	55.16
	Total	23,811	36,269	2,183	1,040	92	44	60	29	47.64
1879–80.	White	22,087	33,645	1,957	960	89	43	58	29	49.05
	Col'd	2,387	3,669	309	152	129	64	84	41	49.09
	Total	24,474	37,314	2,266	1,112	92	45	60	29	49
Average	White	21,969	32,013	2,085	1,046	95	48	65	33	50.17
	Col'd	2,069	3,334	325	164	157	79	96	48	50.
	Total	24,038	35,397	2,410	1,210	103	50	68	34	50.

VENEREAL DISEASES IN MERCANTILE MARINE.
As shown by U. S. Marine Hospital Service Reports.

Year.	Total Sick.	No. Cases of Venereal Diseases.	No of Cases of Syphilis.	Per 1000 of Sick. Venereal.	Per 1000 of Sick. Syphilis.	Per Cent of Syphilis to Venereal.
1875–76.....	10,975	2,698	2,110	246	192	78.20
1876–77.....	10,914	2,061	1,627	189	149	78.94
1877–78.....	11,334	2,162	1,825	190	161	84.41
1878–79.....	11,449	2,362	1,818	206	159	76.93
1879–80.....	24,860	6,384	4,492	257	180	70.38
Average	13,906	3,133	2,374	225	171	75.71

The last year of the Marine Hospital reports includes patients treated at the dispensaries and surgeons' offices outside of hospitals. Neither these nor the naval and military returns include the large number of cases not registered, and treated surreptitiously by apothecaries, nurses and hospital stewards. Officers generally avoid the necessary exposure, and their cases, consequently, seldom appear on the returns. Enough has been shown to establish this fact, that at least one man in every thirteen in the naval service of the United States—last year one in ten; one in every nine in the army—of the negro troops one in six; one in every seven in the British army; and one in every four of the merchant sailors presenting themselves for treatment at marine hospitals and dispensaries, is affected with some form of venereal disease.

Your committee are able by the courtesy of the surgeon-general of the navy to supplement these alarming figures by the significant fact that of the boys who were applicants for enlistment as apprentices in the United States navy during the year 1879, twenty per thousand—one in every fifty—lads under seventeen years of age were rejected on account of venereal diseases, twelve of these being syphilitics. Furthermore, of the young men examined at a certain institution which they had left two years before in good health, not one in five escaped venereal disease of some sort. There is no reason to believe that the proportion among other young men is less appalling. The family physician and the specialist for private diseases, advertised without disguise in the family newspaper, will never tell the tale of the tens of thousands who seek relief at their hands.

But, even were it possible to obtain accurate information of the number of cases of venereal disease contracted in coitu, it would give no indication of the actual injury to the human race by these diseases. It would take no account of the myriads of the happily still-born, and of the feeble offspring who bring their taint into the world with them, after having diseased their mothers during their uterine existence; nor of those other myriads, contaminated by mere contact with the infected who mingle in every crowd. Every one instinctivly shrinks from the touch of the sufferer with small-pox; but how few realize that the syphilitic is a leper also to be shunned? how few mothers are aware of the danger to themselves and children from nurses and housemaids drawn from a population in which every fifteenth person is diseased? how few parents suspect the peril to their daughter from her accepted lover's kiss, who may be that one in every five young men among the better classes who has a venereal disease, which there is one chance in two is syphilitic?

These are not speculations. Gross has seen many cases communicated by kissing, and he tells of fifteen women, nine children and ten men diseased by a midwife, who had a chancre on her finger, contracted in the exercise of her profession, and who had thus carried the disease from house to house.

Marion Sims says: "I have seen a cook and chambermaid with syphilitic ulcers on the fingers, and nurses infected by the children who had been born of syphilitic parents, in turn infecting sucking babes born of healthy parents, and I have known a drunken vagabond husband to contract syphilis in a low brothel and communicate

it to his wife, who unwittingly gave it to her four children simply by using the same towel and wash-bowl;" and one of your committee can add the case of an estimable and venerable lady who lost her eyesight this very year from using a towel in her son's room, carelessly left by him upon the rack, and another of the wife of a clergyman, who, this summer, sought relief at a Virginia spring for a horrible affection contracted in domestic contact with her servant.

Dr. Wales, the present surgeon-general of the navy, saw a number of cases of chancre of the lips among the smokers of one set of cheroots, of which the wrappers had been moistened by the saliva of a Manila cigar-girl; and at Beyrout he learned that it was not unusual for syphilis to be contracted by using an arghileh that had been pressed by the lips of a diseased smoker. Who would venture to eat the fig from Smyrna if he had seen the top layer of the choicest box pressed flat by the saliva-wetted thumb of a packer, who, there was one chance in ten, was a syphilitic?

A member of your committee astounded an otherwise well-informed gentleman by explaining the risk he ran after he had been capsized in a river, in accepting the proffer of a flannel undershirt from a young man whose body was accidentally discovered to be spotted with a suspicious eruption.

A lady was equally alarmed when told by her husband, a physician, that she had invited to her table a young man, who, in the course of a physical examination that morning, had been found to have his mouth and tongue covered with mucous patches, and that her daughter was dancing in a public ball-room with another whose body was repulsive from syphilitic ekzema.

A tired invalid at a fashionable hotel had just settled himself in bed, when the odor of tobacco on the pillow prompted an inspection, which revealed sheets which had not been changed, and which, being a medical man, he quickly deserted, conscious that they might have shrouded a syphilitic predecessor.

An editorial in the College and Clinical Record, of Philadelphia, of October 15, states: "It happened to the writer to be recently called to see a man of most respectable surroundings, who bore an unmistakable venereal sore upon his lip, and subsequently manifested all the features of secondary syphilis. It was said that this had followed a trifling surgical operation upon the part affected for the removal of a slight deformity, the instrument or hands of the surgeon communicating the specific virus in the same manner, it will be remembered, that a New York dentist not long ago communicated syphilis by his forceps, and a well-known laryngologist inoculated a number of patients with pharyngeal chancre."

When the public knows by how many thousand channels this disease may assail them, your committee have no doubt that they will demand protection at any cost, and they urge upon this Association the promulgation of the fact that so long as syphilitics are allowed to go unrestrained, the spotless woman and the innocent child share the danger of contamination with the libertine and prostitute.

Let it be known that this fearful pest may be communicated—

By the blankets of the sleeping-car, and the sheets, towels and napkins of the steamship, hotel or restaurant;

By the hired bathing dresses of the seaside resort, and the costumes rented for the fancy ball;

By the chipped edges of a coffee-cup, as seen at most hotels and eating-houses, and their half-cleansed knives, forks and spoons;

By the public drinking vessels in the railway car or station, as well as the public urinal or closet;

By the barber's utensils, the brush and comb in the guest-chamber, the hatter's measure or the borrowed or sample hat;

By the surgeon's or dentist's instruments, or the vaccinator's lancet;

By the broom or dust-brush handled by a parlor maid, or by the spoon touched by the mouth of the cook or nurse;

By the toys sold to children in the streets by vendors with poisoned lips or fingers;

By playing-cards and visiting cards which have been used, and especially by car-tickets and by the paper money which circulates in a city where 50,000 syphilitics are at large.

By the loaned pipe, or cane or gloves;

By the grasp of a friend's hand or the kiss of a betrothed lover; by the son to his mother and sister; the husband to his wife and unborn child, and by the latter to its mother.

Were venereal disease restricted to those who seek illicit sexual gratification, it might be well to let the guilty suffer and die; but when their sin is sure to leave upon them an ineradicable taint, and to be transmitted to their helpless offspring; when, worse than all, the syphilitic leaves his stain upon whatever he touches to foul the chance passer—man, woman or child—as fearfully as if they had visited the vilest lupanar, it becomes the duty of this Association—the most important of all its duties—to devise some plan for their protection.

Your committee have been charged with the suggestion of such a practical plan. Of the numerous propositions submitted to them, that most zealously advocated provides for the registration and compulsory examination of prostitutes, and the seclusion of those diseased; but this alone your committee does not hesitate to admit to be inadequate.

It has, undeniably, accomplished a wonderful amount of good in continental cities, in the military towns of England, in insular garrisons like Malta, and recently and remarkably in Japan. On this point the universal testimony of naval and military officers cannot be impeached. Fournier, one of the ablest of living syphilographers, declared to Medical Director Coues that syphilis had been virtually stamped out of Paris, when the advent of the German army reintroduced it; but he expressed his confidence that it would again be stamped out as before.

Col. Fletcher, of the surgeon-general's office of the United States Army, writes to your committee:

"In 1863, while I was on duty in Nashville, the question of the periodical examination of prostitutes as a protection to the troops stationed at or passing through the city was referred to another medical officer [Dr. William M. Chambers, of Charleston, Ill., Surgeon U. S. Volunteers] and myself. We drew up regulations for the pur-

pose, and for nearly three years the women were examined—at first every two weeks, but subsequently every ten days.

I believe this was the first occasion of any systematic inspection of prostitutes attempted in the United States. Its results may be briefly stated thus:

1. The amount of venereal disease was markedly lessened, so much so that its occurrence came to be looked upon (absurdly, of course) as an imputation on the care of the examining surgeon. I have more than once known a company officer complain that a man was off duty for disease caught of such a girl, at such a time, and demand that she be sent to the hospital.

2. The women, who were at first rebellious, became quite reconciled to the system. I have known them to come to the hospital voluntarily, desiring to be examined for suspected disease.

3. It was self-supporting, the fees paying the expenses of the hospital."

To-day the Nashville prostitute advertises herself in big gilt letters over her front door, before a blazing light, more conspicuously by far than were she enrolled in a police register, while purblind virtue and false morality stalk by and leave no other guarantee to society than the poor creature's own good sense that her house shall not become a focus of disease as disastrous as small-pox or diphtheria.

In ten years, the surgeon-general of the navy is authority for stating, the amount of venereal disease on the Asiatic station has fallen from 425·8 to 112·1 per thousand, a difference of 313·7 per thousand, due to the examination of prostitutes practiced at Hong Kong and in Japan, and the seclusion of infected women in Lock hospitals. The scandalous scenes which disgrace the chief thoroughfares of Liverpool and London and New York, are no longer possible in cities like Paris and Lisbon and Hamburg, where public women are under police surveillance; nor is it true that clandestine prostitution attains such enormous proportions in places where the Gan Keiro or Yoshiwara confines the whore as in Japan, or where the temples of Venus Meretrix, as in Marseilles, have their own secluded quarter, to be shunned by the virtuous, that it does in Philadelphia and Boston and Brooklyn, where the respectable woman is jostled in every street by unsuspected courtesans, and unfledged boys are lured to disease by young girls in the garb of decent poverty.

"Doubtless," says Diday, "a sensible progress has marked the beginning of this age. With the establishment of a better regulated surveillance, we have seen the coincidence of the diminution of the number of venereal affections, but the persistence of the scourge is an evidence of the insufficiency of these measures." "How is it then," asks Fournier, "that syphilis is especially derived from inspected women? It is, on the one hand, because the relations with this class of women are more numerous; and, on the other, because the surveillance which is exercised over them is completely insufficient."

If the Contagious Diseases Act of England has not accomplished all the good contemplated, it is because the act has not been stringent enough. If syphilis re-entered Paris after having been once stamped out, it was because every avenue for its approach was not carefully guarded.

The idle charge, endeavored to be substantiated by figures, that

the inspection of public women has only induced a greater amount of disease, is not worth refuting; but the insufficiency of these inspections is evident—

Because, while discovering women who are diseased at the weekly or semi-weekly visit, it leaves them unprotected against the intermediate approaches of infected men and the unconscious contamination of their subsequent visitors;

Because minute abrasions, hidden deep in the vagina or among its rugæ, may escape detection;

Because a woman may undoubtedly be the vehicle of communicating disease from one man to others, without herself becoming infected;

Because women, who are not avowed and registered prostitutes, shop-girls, domestic servants, saloon attendants, ballet girls, choristers, kept women and the like, are exempt from examination; and chiefly,

Because it ignores the men, who are the original contaminators of the prostitute.

Furthermore, in this country at least, it is a fact that prostitutes, except those of the lowest class, have learned that it is to their own interest to keep well. There are few public houses which do not now have their regular medical attendants, who examine the inmates and treat them when diseased, and the first lesson taught the young harlot is to carefully inspect her male visitor, however gentlemanly his exterior. As the erring country girl brings forth the fruit of her illicit amour as promptly as if wedded, because ignorant of her sinning city sister's devices to avoid such a calamity, so the poor shop-girl, unaware of the sanitary value of syringes and astringent lotions, is diseased by the well-dressed admirer who has turned her head, when the professional whore would have driven him from her room. The young libertine of this day can consequently visit brothels with little risk. The sentimental objection that their location is thereby published and their nefarious trade advertised, is of little weight beside the fact that the young man bent upon sinning might be saved from irretrievable ruin, who, with no less moral turpitude, consorts with the shop-girl whose favors are bought with cheap jewelry, or the housemaid whose chamber is conveniently near his own, and who gratifies him without charge.

While believing that the police registration of brothels and their restriction to designated quarters under sanitary surveillance are in the interest of humanity and morality, and that this no more implies the recognition and countenance of the sin of immorality than the license of rum-shops and the taxation of whisky-stills presuppose the encouragement of intoxication; believing that the toleration and connivance, through pretended ignorance of their existence, of bawdy-houses, bed-houses, cheap lodging-houses, spurious dentists' offices, dressmakers' rooms and cigar shops, and other notorious places of resort, and the freedom of exposure permitted in public places to the most abandoned and unmistakable strumpets, are the most monstrous blots upon the civilization of this century, and infinitely more reprehensible than their repression and sanitary and disciplinary control by the authorities, your Committee, nevertheless, consider this to be rather a question of public morals than of public

health, and they therefore now only recommend as in their opinion the most effectual practicable means of preventing venereal diseases, the enactment by the Legislatures of the several States of a law constituting it a criminal offense or misdemeanor to communicate, or to aid or abet in any way the communication of a contagious disease, such as small-pox or syphilis, and empowering and requiring health officials to establish such regulations as may be necessary for the prevention, discovery, treatment and suppression of such diseases.

Deterred by the fear of public accusation and its consequences, no diseased man would thereafter venture to cohabit with any woman, whether public harlot, clandestine strumpet, or his own wife.

Satisfied that the law would punish the unscrupulous wretches who have hitherto so cruelly wronged them with impunity, no woman would care to evade its application to herself, and not only the poor panderer to man's lust would have a greater incentive to preserve her personal cleanliness, but the proprietress of the bawdy-house would be equally responsible for and equally interested in the physical welfare of its inmates.

Inspections would be voluntarily solicited or cheerfully submitted to, and only those perversely negligent of sanitary observances and the degraded habituées of the lowest slums, would become subjects of sanitary constraint, and with the professional burglar and blackleg, be treated as forever objects of suspicion.

It might open the way to false accusations by abandoned women, but they who object to any semblance of protection of vice, can hardly find fault with this additional impediment to sensual indulgence.

Under the operation of such a law it would become the duty of every physician to exact from his syphilitic patient, that voluntary isolation or seclusion which may be necessary to prevent contamination, under penalty of punishment of the former for his neglect to advise, or of the latter for his refusal to conform to the advice. While it is manifestly impracticable to require a physician to confine his syphilitic patient in a pest-house, it is, nevertheless, his legitimate office to instruct him to shun such contact with his fellow-beings as may expose them to the risk of contamination. Military and naval medical officers already have, and the surgeons of the marine hospital service and those of emigrant and passenger ships, ought to have the right to ascertain the condition, and the power to restrain the liberty of diseased men and others under their charge.

For the syphilitic who marries and contaminates an innocent woman, and begets a diseased child, the law can scarcely frame an adequate punishment, while no code of ethics should permit a medical practitioner to screen his infamy.

The plan proposed by your committee implies the appointment of sanitary officers in every hamlet, village, town and city of the country, subordinated to and controlled by county, municipal, or State Boards of Health, and empowered to investigate and discover every preventable cause or form of disease, syphilis included. They further recommend the establishment of special or Lock hospitals, for the gratuitous treatment of all venereal affections, and in the absence of such hospitals, provision for their treatment without charge and without unnecessary exposure of their victims by health officials un-

der whose cognizance they have come, since, as Dr. Beardsley has well stated, "the cost of treatment for venereal lesions has become so heavy, the prices so exorbitant, that thousands are deterred from consulting a physician through fear of being fleeced." Prof. Andrews quotes the case of a private disease doctor, one of a dozen in Chicago, whose receipts in a single month amounted to $2,000! The special hospitals suggested would naturally supplement and not wholly supplant the private charities, dispensaries, and special wards in general hospitals for the treatment of such as might be reluctant to enter the former, which, however, it is believed, might by thoroughness and care in treatment, not only attract a large proportion of unfortunate sufferers, but ultimately become the means of accomplishing the reformation of many whose misdoings had led them thither to seek relief.

The plan proposed by the committee of the American Medical Association, consisting of Doctors Gross, of Philadelphia, Marion Sims, of New York, N. S. Davis, of Chicago, John Morris, of Baltimore and J. M. Toner, of Washington, at Louisville, Ky., in 1877, though in the same direction, is less comprehensive than that of your committee. They reported: "That in their judgment there is no possibility of stamping out syphilis until all the nations of the world are protected by proper legislative measures. Great difficulties, unfortunately, surround the execution of laws having for their end the prevention of syphilis, and it is impracticable, at the present time, in view of the ignorance and prejudices of men, to secure more than partial legislation looking to this purpose. We can, therefore, only hope to obtain the passage at first, of enactments having in view the regulation of persons engaged in the military and naval service of the government, and also those ordinarily subject to the control and supervision of the police and municipal authorities of cities and large towns, though in the end we are convinced that the extension of this control and supervision to the whole civil population will be the inevitable legislation of all countries." Your committee have contemplated this wider application of the law in the plan they have unanimously concluded to submit, and which it only remains for them to formulate in the following resolution:

Resolved, That the American Public Health Association earnestly recommends the municipal and State Boards of Health to urge upon the legislative bodies of this country the enactment of a law constituting it a criminal offense to knowingly communicate, directly or indirectly, or to be instrumental in communicating a contagious disease, such as small-pox, scarlet fever, or venereal disease, and giving to the said Boards of Health, and to the State and municipal health officials under their control, the same power in the prevention, detection, suppression and gratuitous treatment of venereal affections, which they now possess in the case of small-pox or other contagious diseases.

Respectfully submitted,

ALBERT L. GIHON, M.D., Medical Director U. S. Navy, Chairman.
J. M. KELLER, M.D., Hot Springs, Arkansas.
GEORGE M. STERNBERG, M.D., Surgeon U. S. Army.
D. C. HOLLIDAY, M.D., New Orleans, La.
PRESTON H. BAILHACHE, M.D., Surgeon U. S. Marine Hos'l Service.
WILLIAM E. GRIFFITHS, M.D., Brooklyn, N. Y.

It was moved and seconded that the resolution offered by the committee be adopted by the Association.

Dr. Hunt, of New Jersey, was not in favor of the transfer of this subject to the halls of the legislatures of the States, and would therefore offer a substitute, which was read.

Hon. Erastus Brooks, of New York, was opposed to the substitute and in favor of the several legislatures of the States taking cognizance of the matter, and hoped that the resolution of the committee would be adopted.

Dr. A. N. Bell, of New York, also spoke in favor of the adoption of the resolution.

Dr. Dake, of Nashville, would like to see the resolution adopted.

Dr. Atchison, of Nashville, wanted to go slow in this matter. He was not prepared to receive the statistics read by the committee. His was a rural district. Disease had not reached the dimensions enumerated in the paper among the mountaineers of Tennessee. He was not in favor of the adoption of the resolution: he wanted to see the report of the committee printed for the education of the masses.

Dr. Wight, of Milwaukee, said in his opinion we were now ready for the adoption by this Association of such a resolution; that the legislatures ought to take the subject in hand. He was opposed to the adoption of Dr. Hunt's substitute, and was in favor of the adoption of the original resolution.

Dr. Evans, of Yazoo City, spoke in favor of the adoption of the resolution as reported by the committee.

Dr. Hunt withdrew his substitute, Dr Gihon having amended the committee's resolution.

The question was put by the chair: "Will the Association permit the committee to amend its resolution?" Permission was granted.

Dr. Gihon said that Dr. Atchison urged us to "make haste slowly." He would inform him that he had for four years been "making haste" to have action taken upon this subject.

The resolution was then adopted, the amendment being the omission of the words "municipal and State Boards of Health."

After recess, Dr. Gihon, by request, offered the following resolution, which was read and referred to the executive committee without debate:

Resolved, That the executive committee be instructed to communicate with the State and municipal Boards of Health throughout the country, and supply them with a copy of the report of the committee on prevention of venereal diseases, and request their co-operation in the attainment of the object of the resolution submitted by the committee and adopted by the Association.

Rev. Dr. Wines, of Illinois, spoke in reference to the resolution. He said the subject was one of jurisprudence and social reform. The report of the committee for prevention of venereal diseases contemplated the police surveillance of prostitution, the expenditure of large sums of money from the public treasury, and increased expenses by Boards of Health. The question was too broad to be taken hold of by an association organized for sanitary reform. He did not know that the society could prepare a law, which was the necessary requisite for a proper enforcement of the suggestions of the commit-

tee. He had no great and superstitious confidence in the power of legislation to right wrongs. If the resolution was passed some cities would adopt a modified system of licensed prostitution. He would ask the members of this Association if they thought the police in large cities were the proper persons to carry out such a plan as the one recommended. He called attention to the force-action of man. The sexual passion of a man finds vent in one of two directions—under the seal of marriage or outside the seal of marriage. Just in proportion as marriage was increased, prostitution was decreased, and vice versa. Whatever promotes prostitution strikes a blow at marriage. We should defend the married state more than we fight venereal disease. In countries where prostitution is regulated, there the loosest morals exist in regard to marriage. In France the law forbids you to inquire into the parentage of a child. This examination proposed by the committee makes of woman a simple animal. He hoped that this Association would not commit itself to any plan of action at this session.

Dr. Gihon: The very object of this resolution was to protect the marriage bed from being defiled. It aimed to preserve the purity of the young woman, and not have her prospects forever blighted by a syphilitic young man. As a father, he would rather have his daughter live and die unmarried, than become the wife of a man contaminated with this disease.

Dr. Bell: The committee who have had this in charge have considered every aspect in the case for four long years. We must now deal with causes, not results. This Association was organized for the prevention of disease. The committee do not ask that women alone be examined, but that men should be examined and prevented from spreading their diseases broadcast throughout the land. It did not become this Association to shirk reponsibility or to shrink from action on this, next to intemperance the most fatal and most criminal of all causes of misery and death, the world over. And if preventable mortality is criminal mortality, as we all believe, surely it is high time for effort against this baleful disease. He therefore favored the resolution as an effort in the right direction, and advocated its adoption.

Dr. Ames, of Massachusetts: This Association has already acted on the resolution of the committee. If we cannot fully accomplish a thing, we may at least aid it. He could not see any harm in making the inquiry. He was not in favor of licensing prostitution. The resolution aimed at the better care of men. We make no mistake in seeking after the truth. It is almost impossible to draft a law that would hit every community. Each municipality and State must make laws and act for itself. I believe we shall do no harm in passing the resolution now before the Association.

Rev. Dr. Wines: Suppose that the health committee of any city conclude, after the passage of this resolution, to license prostitution and cease to place it in the category of crimes?

Dr. Ames: I do not believe that this Association, when its recommendations are adopted, has done with the subject.

Dr. Hunt, of New Jersey, was satisfied to leave the matter where it was yesterday. He objected to the consideration of the resolution. He did not want the members of this Association to request State

Boards of Health to take action in this matter. He begged this Association to let the matter rest where it was.

Dr. Bell, of New York, was sincerely glad that that which was dropped out yesterday was now restored. As the resolution was doctored yesterday it had been emasculated. The four years of study by the committee had placed them in possession of all the facts and figures necessary to urge upon this Association the passage of the resolution before them at this time.

Dr. Chamberlain, of Connecticut, seconded the views of Dr. Hunt, of New Jersey; he was a member of the Connecticut State Board of Health; he represented the views of his State in this matter. Sanitary reform would not be benefited in his State by the passage of this resolution.

Prof. Brewer, of New Haven, confirmed Dr. Chamberlain's remarks, he being a member of the Board of Health of the same State.

President Billings put the question: "Shall the resolution now pass?" It was adopted by a vote of 93 yeas to 28 nays.

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Mortality Statistics.—The annual death-rate per 1,000 persons living, of the estimated or enumerated population, according to the most recent weekly returns of New York, was 26.46; Philadelphia, 21.90; Brooklyn, 24.03; St. Louis, 17.3; Baltimore, 20.85; Boston, 24.22; Cincinnati, 18.25; New Orleans, 31.53; San Francisco, 19.80; Buffalo, 12.7; Cleveland, 16.63; Charleston, 25.54; Dayton, 9.33; Erie, 11.14; Lowell, 26.96; Worcester, 18.64; Cambridge, 15.48; Fall River, 24.41; Lawrence, 32.33; Lynn, 22.41; Springfield, 9.81. Monthly returns: Nashville, 16.81; Salt Lake, 22.56; Lynchburg, Va., 19.64; Providence, 16.71; Selma, 17.58. Foreign cities, weekly returns: London, 21.2; Liverpool, 25; Birmington, 16.1; Manchester, 22; Dublin, 33.2; Belfast, 30.6; Cork, 26; Glasgow, 19.4; Edinburgh, 22.4; Dundee, 19.8; Brussels, 25.8; Antwerp, 26.9; Ghent, 25; Zaragoza, 36.2; Palma, 26.5; Buda Pesth, 29.5; Paris, 25.90; Rome, 23; Turin, 15.1; Venice, 26 5; Berlin, 25.7; Munich, 23; Breslau, 21.67; Vienna, 24; Copenhagen, 19.7; Stockholm, 30.6; Christiania, 22.26; Amsterdam, 24.8; Rotterdam, 24.9; The Hague, 19.4; Calcutta, 23.6; Bombay, 29.3; Madras, 32.1; Geneva (with suburbs), 24.3; Basel, 30.6; Bern, 20.9; Havre, 38.9; Warsaw, 24.32; Salford, 24.71; Lisbon (with suburbs), 32.8; Porto (with suburbs), 30.2. Monthly returns: Messina, 26.0; Genoa, 20.5; Hamburg (State), 25.5.

Editor's Table.

The International Sanitary Conference convened in Washington on the recommendation of the President, have for consideration the following propositions:

A. The establishment of a reliable and satisfactory international system of notification as to the existence of contagious and infectious diseases, more especially cholera and yellow fever.

B. The establishment of a uniform and satisfactory system of bills of health, the statements in which shall be trustworthy as to the sanitary condition of the port of departure, and as to the condition of the vessel at the time of sailing:

I. Who should be the certifying officer or authority as to the sanitary condition of ports and places and of vessels?

II. How can the certifying authority obtain trustworthy information as to the actual sanitary condition of ports and places and as to the presence of contagious and infectious diseases?

III. When yellow fever or cholera exists at or in the vicinity of a port or place, what examination should be made of a vessel sailing therefrom to secure a trustworthy knowledge of her sanitary condition?

IV. To what extent and under what conditions should a clean bill of health be considered as affording satisfactory evidence that the vessel is free from danger of conveying infectious disease?

V. In what way can trustworthy information be obtained from ports or places in countries which have imperfect or unsafe quarantine and sanitary regulations, and which may be unwilling or unable to adhere to the proposed international system?

VI. Whether a schedule of graduated penalties could be fixed to be exacted from vessels for various offenses arising under the proposed international system?*

Twenty years ago the writer hereof was chairman of a committee which reported on a series of resolutions comprehending the same general objects as the foregoing propositions, in part, but changed in order as follows:

"Sanitary authorities shall be established upon a uniform basis by the countries or governments adopting this code" (a code of marine hygiene was reported by the committee), "and shall be composed: First, of a responsible agent of the government, who shall be a doctor of medicine; and second, of a local Sanitary Council or Board of Health. . . . All vessels, before lading, must be visited by a delegate of the sanitary authority, who shall be a doctor of medicine, and submit to hygienic measures, if deemed necessary. The vessel shall be visited in all her parts, and her hygienic state ascertained: The authority shall inquire into the state of the provisions and beverages,

* For fuller particulars in regard to the purposes of the International Conference and of points to be considered, see THE SANITARIAN, Vol. VIII., pp. 498–500.

in particular of the potable water and the means of preserving it; he shall also inquire into the state of the crew, and in general into everything relating to the maintenance of health on board. If any person has been shipped having a transmissible disease, such person shall be forthwith discarded.

. . . Captains and masters shall furnish to the sanitary authority all the information and all the evidence, to the best of their knowledge, demanded of them. If the sanitary authority judges necessary, and does not believe himself sufficiently informed by the captain or other person in charge, he can proceed to a new visit, after the lading of the ship, in order to assure himself if all the prescribed hygienic measures have been observed.

. . . In no case should the number of individuals to be accommodated on board any vessel, or in any apartment provided for the accommodation of crew or passengers, exceed in ratio one individual to every four hundred cubic feet of air space, together with provision for effectual ventilation in all weathers.

. . . Bills of health shall be delivered in the name of the local government by the sanitary authority, *viséd* by the consuls or commercial agents, and be of credit in the ports of all governments adopting this code.

The bill of health shall contain the name of the vessel, the name of the captain, or master, and the results of the examination, relating to the tonnage, merchandise, crew and passengers; it shall state the exact sanitary condition of the place, the hygienic state of the ship, and whether there are any sick on board. In short, the bill shall contain all the information that can enlighten the sanitary authority of the port of destination, to give him as exact an idea as possible of the public health at the place of departure and environs; of the state of the ship, her cargo, the health of the crew and passengers. The environs are those places in habitual communication with the port of departure, and possessing the same sanitary relations. Whenever there prevails at the place of departure, or in its environs, one of the three maladies* reputed to be importable or transmissible, and when the sanitary authority shall have declared its existence, the bill shall give the date of the declaration. It shall give the date of the cessation of the same when the cessation shall have been established.

. . . The Bill of Health must be either *Clean* or *Gross*. The sanitary authority shall always pronounce upon the existence or non-existence of disease at the port of departure. Doubtful cases shall be interpreted in the most prudent sense, and the bill shall be *gross*. In regard to passengers, for those whose health may be suspected, the sanitary authority may demand the certificate of a doctor of medicine, known to him to be of good standing, and if any proposed passenger is thus found to be in a condition compromising the health of the ship or of persons on board, he shall, upon the direction of the sanitary authority, be prohibited. Bills of health can only be considered as valid when they have been delivered within the forty-eight hours last preceding departure. If the departure is delayed beyond

* Plague, cholera and yellow fever.

this period, the bill must be *viséd* by the authority delivering it, stating whatever change may have taken place. The existence of transmissible or importable disease in the quarantine establishment of any place shall not alone be considered cause sufficient for a *gross* bill of health.

. . . All captains or masters touching at or communicating with a port, shall have their bills of health *viséd* by the sanitary authority; or in default of such authority, by the delegated office of the local police."*

The subsequent unfortunate state of this country, and the general want of sanitary authority in commercial places for the ten years, at least, next following the report from which the extract above given is taken, rendered further action by that Committee impracticable. But since that time the progress of preventive medicine has well nigh secured the organization of sanitary authorities in commercial places everywhere, and the time is now more propitious than ever before for securing the objects contemplated by the United States Quarantine and Sanitary Convention of twenty years ago, and the immediate purpose of the International Conference now convened in Washington.

In addition to the conclusions arrived at as above, given for the same purpose, and in particular to question IV., we would add:

If the vessel on arrival has a clean bill of health, is clean in all her parts, and has had no quarantinable disease on board since the date of bill of health, she should be deemed free from danger of conveying infectious disease.

To question V.:

By a competent medical attaché to the consulate or commercial agency, whose duty it should be to fulfill all the conditions comprehended in ports having reliable sanitary authority.

To question VI.:

Thorough cleansing in quarantine, and such detention as may be necessary to secure it, at the expense of the vessel, would be sufficient.

Such are the regulations which we believe would secure the greatest amount of practical safety from the port of departure, in the present state of sanitary science. But, to be complete, the international code should comprehend specific regulations in regard to cleanliness, ventilation, wholesome food and water, sleep and clothing, *during the voyage*, and competency on the part of masters for the observance of such regulations, as being equally necessary with those to be observed at the ports of departure and arrival.

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* Fourth National Quarantine and Sanitary Convention, 1860: Quarantine Regulations, pp. 180–190.

The Eighth Annual Meeting of the American Public Health Association, recently held in New Orleans, was in some respects the most important and interesting one ever held by the Association. The place and time proved to be particularly well chosen. The public authorities and the citizens, particularly the physicians, welcomed the Association with open hearts and open houses; and by their full attendance on the sessions evinced deep interest in the proceedings. The papers read, and the discussions thereon, were, for the most part, of a high order, characterized by an unusual amount of original work; and several of them were the more interesting by reason of their particular bearings on New Orleans, and her commercial relations to places beyond. One paper only overleaped the bounds of courteous discussion, but it stung itself to death with its own venom, and by its absolute certainty in matters universally doubtful. To the newspapers of the city, and particularly to the *Democrat*, the Association is indebted for unusually full and accurate reports of the proceedings and other courtesies.

With the object of giving the earliest possible practical benefit to the proceedings, and in strict keeping with the objects of the Association, we begin, on other pages of this number, the publication of the chief papers read, which we purpose to continue through several numbers—chiefly made up from the *Democrat*.

We shall also in future numbers notice, and in part publish the proceedings of the Sanitary Council of the Mississippi Valley Associaton, and the Quarantine Convention held during the same period.

The officers and committees of, and the resolutions and recommendations by the American Public Health Association, elected, appointed, and adopted for the ensuing year, are as follows:

President—Dr. Chas. B. White, of New Orleans, La.; First Vice-President—Prof. R. C. Kedzie, of Lansing, Mich.; Second Vice-President—Prof. Henry F. Campbell, of Augusta, Ga.; Secretary—Dr. Azel Ames, Jr., of Wakefield, Mass.; Treasurer—Dr. J. Berrien Lindsley, of Nashville, Tenn.; Members of the Executive Committee—Dr. D. C. Holliday, of New Orleans, La.; Dr. E. M. Hunt, of Metuchen, N. J.; Dr. Geo. M. Sternberg, of the United States Army; Dr. E. L. Griffin, of Fon du Lac, Wis.; Dr. J. G. Thomas, of Savannah, Ga.; Dr. Thos. F. Wood, of Wilmington, N. C.

Advisory Council.—Alabama—R. D. Webb, M.D., Livingston; California—Henry Gibbons, M.D., San Francisco; Florida—Hon. S. C. Cobb, Pensacola; Georgia—W. H. Elliott, Augusta; Illinois—J. H. Rauch, M.D., Chicago; Indiana—J. F. Hibberd, M.D., Richmond; Mississippi—Wirt Johnson, M.D., Jackson; Louisiana—Ed. Fenner, M.D., New Orleans; Maryland—James A. Stewart, M.D., Baltimore; Massachusetts—R. F. Davis, Wakefield; Pennsylvania—Henry Hartshorn, M.D., Philadelphia; Ohio—T. C. Minor, M.D., Cincinnati; Missouri—George Homan, M.D.; Rhode Island—E. M. Snow, M.D., Provi-

dence; Tennessee—John Johnson; Virginia—J. G. Cabell, Richmond; Michigan—Henry B. Baker, M.D., Lansing; Iowa—W. S. Roberts, Davenport; West Virginia—James E. Reese, M.D., Wheeling; District of Columbia—Smith Townshend, Washington; New York—Elisha Harris, M.D., Albany; North Carolina—Thomas F. Wood, M.D., Wilmington; South Carolina—H. D. Frazier, Charleston; Connecticut—C. W. Chamberlain, M.D., Hartford; New Hampshire—S. P. Conn, M.D., Concord; Vermont—Henry D. Holton, M.D., Brattleboro'; Texas—J. H. Pope, Columbia; Wisconsin—J. T. Reeve, M.D., Fon du Lac; Minnesota—C. N. Hewitt, M.D., Red Wing; New Jersey—D. C. English, M.D., New Brunswick; Arkansas—A. L. Breysacker, M.D., Little Rock; Kentucky—Pinckney Thompson, M.D., Henderson; Delaware—L. P. Bush, M.D., Wilmington; U. S. Army—Joseph R. Smith, Surgeon U.S A., New York; U. S. Navy—A. Gihon, Medical Director, U.S.N., Washington; Commissioner of Education—Hon. John Eaton, Washington; Marine Hospital Service—P. H. Bailhache, M.D., Washington; National Board of Health—Stephen Smith, M.D., Washington.

Place and time of next meeting: SAVANNAH, Ga., in November next.

Committee on Prevention of Venereal Disease: Albert L. Gihon, M.D., Medical Director U. S. Navy, Chairman; J. M. Keller, M.D., Hot Springs, Ark.; Geo. M. Sternberg, M.D., Surgeon U. S. Army; D. C. Holliday, M.D., New Orleans, La.; Preston H. Bailhache, M.D., Surgeon U.S. Marine Hospital Service; John Morris, M.D., Baltimore, Md.

Committee on the Education and Training of Nurses for Yellow Fever Patients: W. T. Walthall, John Johnson, F. Peyere Porcher, M.D., G. A. Ketchum, M.D., and Hon. John Eaton.

DIPHTHERIA: *Resolved*, That as we know little or nothing of the origin of diphtheria, we will request the National Board of Health to continue its investigations into the causes of this disease.

SMALL-POX: *Whereas*, There are annually occurring in our large centres of population, and frequently in the provincial districts, numbers of cases of sickness and death from small-pox; and,

Whereas, The only certain method of restricting and preventing this loathsome disease is by vaccination and re-vaccination; therefore, be it

Resolved, That the American Public Health Association appoint a committee of five members, whose duty it shall be to take steps looking towards the enactment of a national law upon the important subject of compulsory vaccination.

Resolved, That the Boards of Health of the several States in the Union, or, where no State Boards of Health exist, the State medical societies, be requested to take the matter under immediate advisement, and direct the attention of all local Boards of Health to the importance of seeing that all persons in their respective districts are properly protected by vaccination.

VENEREAL DISEASES: *Resolved*, That for the purpose of securing uniformity in legislation in the States of this Union for the prevention of venereal diseases, the Committee for the Prevention of Venereal Diseases be reconstituted, and instructed to prepare drafts of a State law and of a municipal ordinance calculated to secure the desired results, and report at the next Annual Meeting of this Association.

Soap as an Antiseptic.—A scrap has been going the rounds of our medical contemporaries recently, specially commending the virtues of "Thymoline Soap" for cleaning surgical instruments. In view of the possible transmission of disease by means of surgical instruments, it is certainly well that they should, in all cases after use, be thoroughly cleaned, and in this probably consists their general freedom from danger, surgeons being habitually careful in this regard. But "Thymoline Soap" is a chimera.

According to the Paris Pharmaceutical Society, in their formulæ for new remedies, 1877, when the essential oil of thyme is shaken with an aqueous solution of potash or soda, it is decomposed; the *thymene* does not combine with the alkali—is not saponifiable—and separates, the *thymol* (the antiseptic) readily dissolves, and by treating the solution with an acid, it is thrown down and crystallizes. Thymol is, according to Bucholz, a powerful antiseptic, "ten times the power of carbolic acid." But, although it is soluble in the alkaline hydrates of potash and soda, it cannot be made to enter into combination with them; and being volatile, the heat necessary in the process of making soap dissipates it. It is clear, therefore, that the virtues ascribed to "Thymoline Soap" are simply due to the detergent qualities of soap, cleanliness, in this case, being the true antiseptic; and to effect this, the *purer* the soap from all extraneous substances the better. Thymol is unquestionably a powerful antiseptic, but this is not the way to apply it; moreover, it is unfortunately expensive, and its use, therefore, limited. Soap, on the contrary, is abundant and cheap, and with due precautions in obtaining that which is pure—such as that manufactured by Mr. Chas. S. Higgins, of New York, and so earnestly commended by Dr. Jerome Walker in our December number—it may be safely relied upon for all purposes of mere cleanliness, without the addition of any extraneous substances whatever.

Safes to Protect against Fire are constructed upon the principle of the effectiveness of water in a state of vapor as a protector. The temperature of steam, 212°, being much below the temperature required for the ignition of solid matter, is suspended by means of the cement, or concrete filling in the walls of the safe. Alum, the most commonly used substance for this purpose, holds water by chemical combination. It was used as a "filling" by Messrs. Tann, of London, who claimed, in a patent granted November 25, 1843, "Alum and Austin's Cement and Gypsum." These "fillings," however, deteriorate, as a portion of the small quantity of water, at first retained, evaporates, and alum loses its bulk as it becomes anhydrous. Many alum-filled safes have failed in accidental

fires. A different principle of fire-proofing, one of more recent development, has proved of great practical value. This "filling" consists of whiting (*carbonate of lime*), which is prepared by a chemical process, and mixed with Epsom salt (*hydrated sulphate of magnesia*). It is a dry composition, and never deteriorates until a chemical change is effected by heat. The vapor or steam evolved is strongly charged with carbonic acid gas—a heavy gas that will not support combustion—and it is impossible for combustion or carbonization to take place within a safe while it is being expelled or is present. This composition is peculiar to Herring's Patent Safes, and it is protected by several patents. The unexampled fire record of the safes with this improved "filling" proves them to be trustworthy and illustrates their superiority.

Subscribers are reminded that with this number, subscriptions are due for the ensuing year. We will esteem it a special favor if they will anticipate forthcoming bills at the earliest practical moment. Send checks, postal orders (or money, in registered letters only), payable to THE SANITARIAN, New York.

Literature.

The Smithsonian Report for 1878* is the first by the new Secretary and successor to Prof. Henry, Prof. Spencer F. Baird, for many years previously Assistant Secretary. The report opens with an admirable tribute to the memory of Professor Henry, and a brief of the policy by which the deceased secured for the Institution its excellent repute. Prof. Asa Gray also contributes a biographical memoir of Professor Henry, with a list of his scientific papers, and an account of his special contributions to the discovery and resultant progress in the Electro-Magnetic Telegraph. "Henry and the Telegraph" is the subject of still another paper and tribute to the genius of Professor Henry, by William B. Taylor, giving an admirably concise sketch of the origin and growth of the electric telegraph, and the important contributions of Professor Henry to the invention. An appendix to the Secretary's report gives an account of the principal

* Annual Report of the Board of Regents of the Smithsonian Institution, showing the operations, expenditures, and condition of the Institution for the year 1878. 8vo., pp. 575. Washington: Government Print.

explorations of the Government in 1878, and of the contributions from that source to the collections of the National Museum. The general appendix includes (besides Henry and the Telegraph) biographies of CONDORCET, by M. Arago, translated by M. A. Henry, and LOUIS AGASSIZ, by Ernest Favre; the Effect of Irritation of a Polarized Nerve, by B. F. Lautenbach, M.D., Ph.D.; Researches upon Fever, by H. C. Wood, Jr., M.D.; Constants of Nature, by John Leconte; Ornithological Exploration of the Caribbee Islands, by F. A. Ober; Explorations in Greenland, by L. Kumlien; List of Apparatus Relating to Heat, Light, Electricity, Magnetism and Sound, and Researches in Sound, with special reference to Fog-Signaling, by Joseph Henry; this last is fully illustrated with numerous diagrams showing the effect of wind under varying circumstances, of great practical importance.

The Toner Lectures.*—V. On the Surgical Complications and Sequels of the Continued Fevers, by William W. Keen, M.D., February, 1876; VI. Subcutaneous Surgery: its principles, and its recent Extensions in Practice, by William Adams, M.D., F.R.C.S., September 13, 1876; VII. The Nature of Reparatory Inflammation in the Arteries after Ligature, Acupressure and Torsion, by Edward O. Shakespeare, A.M., M.D., June 27, 1878; VIII. Suggestions for the Sanitary Drainage of Washington, by George E. Waring, Jr., May 26, 1880. These lectures are contributions to knowledge under the auspices of the Smithsonian Institution, and special conditions of DR. JOHN M. TONER, of Washington, who, as before noticed in our pages several years ago (Vol. I), placed a fund in charge of a Board of Trustees, of whom one was the Secretary of the Smithsonian Institution, the interest of which fund to be applied annually for memoirs or essays relative to some branch of medical science, and containing some new truth fully established by experiment and observation. The most recent one of these lectures, the one on the Drainage of Washington, by Col. Waring, is of most timely interest, and should not fail to attract the attention of Congress. The continued and far-reaching prevalence of the miasmatic diseases of Washington is common knowledge; and enormous as the work suggested by Col. Waring for raising the Potomic flats as part of the means of prevention appears to be—even should it, on further study, be required in all its details—it is still insignificant as compared with its importance to the future of the city and its dependencies. The terribly defective sewerage and drainage thereabouts serves but to add to and increase

* Smithsonian Miscellaneous Collections. Washington: Smithsonian Institution. Price, 25 cents each.

the danger of the natural marshes; and in proportion as these conditions are encroached upon by an increasing population, in like manner is the danger to human life and the increasing risk of an appalling epidemic.

Littell's Living Age—that old, but peculiarly living periodical in keeping abreast with the foremost literary productions of the age—is a library of the choicest literature in itself, the best of all the magazines in one. The new volume begins January 1st. Fifty-two numbers of sixty-four pages each, or upwards of 3,300 pages, for the subscription price of $8.00 a year. Whoever would keep up with the best literature of the time at the least pecuniary outlay, should take the Living Age. Littell & Co., Boston.

Mackenzie's admirable work on the Diseases of the **Pharynx, Larynx**, and **Trachea,*** is too well known as the best book on the subjects treated of to need an elaborate notice at our hands. The work before us is a reprint of the first volume of that excellent work, and forms one of the incomparably low-priced excellent series of "Wood's Library of Standard Medical Authors," which all practitioners ought to have.

Medical Hints on the Production and Management of the Singing Voice, by Lenox Browne, F.R.C.S., Senior Surgeon to the Central Throat and Ear Hospital, etc., London, which is said to have had a very great sale in England, has just been republished in this country: a pamphlet of 78 pages, fully illustrated, gives a large amount of useful information on the anatomy and physiology of the voice, useful to all singers and public speakers. Sent by mail for 25 cents. M. L. Holbrook, 13 & 15 Laight St., New York.

Nasal Catarrh is far from being the simple affection that it is too commonly thought to be, as it frequently leads to incurable chronic disease and death. The book before us† is by a well-known, careful practitioner of much experience, is exceedingly well gotten up: clear type, good paper, and excellent illustrations, and worthy the attention of all practitioners.

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*Diseases of the Pharynx, Larynx, and Trachea, by Morell Mackenzie, M.D., Lond., Senior Physician to the Hospital for Diseases of the Throat and Chest, Lecturer on Diseases of the Throat at the London Hospital Medical Coll., and corresponding member of the Imperial Society of Physicians of Vienna. New York: William Wood & Co.

†A Practical Treatise on Nasal Catarrh, by Beverly Robinson, A.M., M.D. (Paris), Lecturer on Clinical Medicine at Bellevue Med. College, etc., etc. 8vo., pp. 180. New York: William Wood & Co.

Roberts' Compend of Anatomy * is a 16mo student's handbook of 188 pages, for use in the dissecting room, following the teacher in the lecture room or reviewing for examination, and commendable for such purposes.

Diet for the Sick, by J. W. Holland, M.D., Professor of Materia Medica, Therapeutics, etc., in the University of Louisville: a 16mo pamphlet of sixty-eight pages, contains many useful suggestions for the preparation of various kinds of food for the sick, equally useful for the physician, nurse, and housewife. Price, 25 cents. Louisville: Jno. P. Morton & Co.

National Temperance Almanac and Teetotaler's Yearbook for 1881 is full of useful information to every family. Price, 10 cents. J. N. Stearns, 58 Reade St., New York.

The Church and Temperance, by William E. Dodge, is an eloquent plea for greater consecration on the part of the ministry of the Christian Church in the service of the cause of temperance, and for the prohibition of the liquor traffic by the State. Price, 10 cents. J. N. Stearns, 58 Reade St., New York.

Publications Received.—Kirkbride on Hospitals for the Insane; Clapp's Is Consumption Contagious? Edwards' How Persons Afflicted with Bright's Disease ought to Live; Commissioner of Education's Report for 1878; Transactions Homœopathic Medical Society of Pennsylvania; Electricty in Medicine and Surgery—J. J. Caldwell; Ventilation of the Madison Square Theatre—Walter G. Elliot, C.E.

L'Education *Physique Scientifique et l'Hygiène Scolaire.* Lettre à M' le Ministre de l'Instruction publique, Sur la nécessité d'introduire un système scientifique d'Éducation Corporelle dans les écoles. Par le Dr. Roth, de Londres. Londres: Baillière & Ce., 20 King William Street, Strand, W. C., 1880.

Ville de Bruxeles. Annuaire Démographique et Tableaux Statistiques des causes de Décès, par le Docteur E. Janssens, Inspecteur du service de santé de la ville, etc., etc. Avec plans et diagrammes en chromolithographie, 1879. 18e Année, Bruxelles, baertsoen, Grand' Place, 5, 1880.

Trastornos del Aparato de la Vision en las fiebres paludeas y accidentes á que puede dar lugar su ineludible tratamiento por el sulfato de quinina, por el Dr. D. Juan Santos Fernandez, Director de una Clinica de enfermedades de los ojos, Director de la "*Cronica Médico-Quirurgica*" de la Habana, etc. Habana, Imprenta militar de la Viuda de Soler y Compañia, Calle de Ricla, num. 40.

*The Compend of Anatomy. For use in the dissecting room and in preparing for examinations, by John B. Roberts, A.M., M.D., Lecturer on Anatomy and Operative Surgery in the Philadelphia School of Anatomy, Demonstrator of Anatomy in the Philadelphia Dental College, etc., etc. Philadelphia: C. C. Roberts & Co.

Contribucion al Estudio de la Viruela en Buenos-Aires. (Causas de su propagacion; excesiva mortalidad en la ciudad y campaña, etc.) Por el Dr. Emilio R. Coni. Miembro de la Société Française d'Hygiène de Paris, Director y Redactor en gefe de la *Revista Médico-Quirurgica*, etc., etc. Memoria presentada a la Asociacion Médica Bonarense. Buenos-Aires. Imprenta de Pablo E. Coni, especial para obras, 60, Calle Alsina, 1878.

Higiene Publica. Apuntes sobre la Estadistica Mortuaria de la ciudad de Buenos-Aires, desde el año 1869 hasta 1877, inclusive. Seguidos del Movimiento de los Hospitales y Hospicios en 1877 y de un Estudio sobre el clima. Por Emilio R. Coni.—Director de la *Revista Médico-Quirurgica*, Ex-oficial primero de la Oficina de Estadistica de la Provincia de Buenos-Aires. Imprenta de Pablo E. Coni, especial para obras. 60 Calle Potosi, 1878.

La Mortalidad Infantil en la Ciudad de Buenos-Aires. —Estudio Comparativo con la Mortalidad Infantil de *Rio de Janeiro, Montevideo, Lima, Méjico y otras ciudades Americanas.* Por el Dr. Emilio R. Coni.—Miembro corresponsal de la Sociedad de Médicina de Lima, de la Academia Imperial de Médicina y de la Sociedad Médica de Rio de Janeiro, Director y Redactor en gefe de la *Revista Médico-Quirurgica*, etc., etc. Buenos-Aires. Imprenta de Pablo E. Coni, especial para obras. 60 Calle Alsina, 1879.

Apuntes sobre el Movimiento de la Poblacion de la Ciudad de Buenos-Aires *durante el año*, 1878.—Consideraciones sobre la Estadistica Médica y movimiento de los Hospitales y Hospicios durante el mismo año, por el Dr. Emilio R. Coni, Director y Redactor en gefe de la *Revista Mdico-Quirurgica, etc.* Buenos-Aires. Imprenta de Pablo E. Coni, especial para obras. 60 Calle Alsina, 1879.

Consideraciones sobre la Estadistica de la Enagenacion Mental en la Provincia de Buenos-Aires. Por los doctores, Lucio Melendez, Médico-Director del Hospicio de las Mercedes (alienacion), etc., y Emilio R. Coni, Miembro honorario de la Asociacion Medica Bonarense y Miembro corresponsal de varias Sociedades médicas de Europa y America. Memoria leida el 13 de Setiembre de 1879 en la 6ª seccion (Psiquiatria) del Congreso Internacional de Ciencias Médicas de Amsterdam, por el Dr. E. Coni, delegado de la Asociacion Médica Bonarense. Buenos-Aires. Imprenta de Pablo E. Coni, especial para obras. 60 Calle Alsina, 1880.

Die Medicinische Staatsprufung in Deutschland und Herr Dr. Warlomont in Brüssel, von Prof. Dr. W. von Zehender, Stutgart Verlag von Ferdinand Enke, 1880.

THE SANITARIAN.

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MEMPHIS SANITATION AND QUARANTINE.*

By G. B. THORNTON, M.D.

The history of sanitary medicine offers few, if any, examples in this country where greater necessity existed for reform in sanitation, or more marked results have been accomplished, in the same length of time, under more adverse circumstances, than in this city. The sanitary condition of Memphis, its defects and advantages, together with a brief statement in regard to its change of government by the State Legislature in January, 1879, involving an abolition of its charter, with the offices of mayor and city council, and the substitution of the less complex and more efficient legislative council, have been briefly detailed in the first annual report of the present Board of Health in February, 1880. They were both peculiar; this radical change of local government followed a few months after one of the most destructive epidemics of yellow fever known in history. Scarcely had the work of reorganization been accomplished, and the new Board began to realize practical results from its operations, than with the advent of warm weather in July the outbreak of yellow fever in three different localities announced the commencement of another epidemic, which would have proven as disastrous as its predecessor had it not been arrested by repressive measures, depopulation and quarantine restrictions.†

This diversion necessarily interfered with the general plan of sanitation indicated and then in active process of execution. The general suspension of business incidental to panic, followed by depopulation, quarantine, and work pertaining directly to the epidemic of 1879, continued until late in October. Consequently the task of removing all known or supposed local causes of a return of the disease the following year had to be perfected, as far as practicable, in the short

* Read before American Public Health Association, New Orleans, December 8, 1880.

† See paper on Yellow Fever Epidemic in Memphis, 1879, in vol. 5, Reports and Papers of Public Health Association.

space of seven months. It has been asserted by those who professed to be competent witnesses, and whose position entitle them to respectful consideration, that the city presented some of the most unsanitary features to be found to exist in any city of its size in the country. Be this as it may, in view of the fact that yellow fever had been epidemic four different times during the period of twelve years, on three of which occasions it was known to have been imported, and on each occasion it continued until after frost, and that the death-rate, as shown by official records, was higher than the average of other cities independent of epidemics, the weight of evidence would rather support the assertion that local conditions favored not only the spread of exotic diseases when introduced, but maintained a high death-rate from endemic diseases. One fact is undeniable, the city obtained a notoriety which was anything else but agreeable to its citizens as a place of residence, or conducive to their interests as a place of business. It is true of a place as of an individual, prejudices once acquired from an evil reputation so mars its good qualities that it is not likely to get full credit for what good it does possess. Bare assertions, unsupported by facts, which time alone can verify, will not remove impressions once fixed. I maintain that the problem of the sanitation of Memphis is now solved, and it is practically reclaimed from those factors which entered so largely into its unsanitary condition, and acquired for it such an objectionable reputation for salubrity.

That so far from its being simply on a par with other cities in the Mississippi valley, it is in the advance, not only in the accomplishment of its work, though that is not by any means perfected, but in a proper sense of what is essential to the maintenance of an effective sanitary system. While nature has done a great deal in the topography of the site on which the city is built, it required the intervention of art, well directed, to remove many existing defects. Its elevated position and natural watersheds afford advantages for drainage not inferior to those possessed by many cities of its size more favored by a lower death-rate.

The elevation in front of the city being at an average of forty-seven feet six inches above high water mark of the Mississippi River, which has a fall of thirty-six feet to extreme low water, affords a mean average of thirty-four feet the year round. In addition to this bayou Gayoso, with several auxiliary branches, commencing in the southeastern portion of the city, runs a northwesterly direction nearly through its geographical centre and empties into Wolf River, about half a mile above its confluence with the Mississippi River. The length of these bayous inside the corporate limits is about five miles, and affords ample fall for thorough drainage. But these, with other natural advantages, alone proved inadequate to the occasion as the city grew in population, and its soil became saturated with decomposed animal and vegetable impurities. Surface drainage alone is inadequate to the prevention of those deleterious miasmas incidental to the easy absorption of noxious fluids, and results have proven that these advantages alone were too much relied on as a proper security against either the occurrence or spread of disease.

The high death-rate accredited to Memphis is not due so much to its climatic influences and natural unsanitary condition or surround-

ings as to other influences which are preventable, and many of which have been within the past year and are in process of being removed.

Without mentioning specifically, or going into a detailed description of those factors which were considered the prime objects of offense, I will merely state in a general way that there had been too little attention paid to sanitary matters by those in authority, they, like a majority of the population, not appreciating the necessity for special sanitary interference, and while many portions of the city were unobjectionable in appearance, a great portion was built without any regard to the simplest rules of sanitary science. Many houses were built at a time when the rudest habitations yielded handsome returns upon such investments, and were made to answer the purpose of properly constructed houses. A large majority of these habitations were occupied by a class of people least likely to observe habits of cleanliness, or to have concert of action with those who were so disposed. Previous to the existence of the present government, no ordinance or law existed requiring some regard as to sanitary arrangements in the construction of houses, either for business or residence purposes. In 1868 ten and three-quarter miles of wooden block pavement was completed on the principal streets. It was subjected to the attrition and wear of the heaviest character of transportation, with no effort toward necessary repairs in places where it showed decay, constantly disturbed by repairs to street railroad, laying gas and water pipes and improperly replaced; its surface was soon rendered uneven and never systematically cleaned. Washing rains or storm-water alone occasionally removed daily accumulations. During the summer months, to prevent the inconvenience of dust, it was kept constantly sprinkled or wet, consequently, the blocks were in many places saturated with water, made additionally deleterious by the admixture of animal and vegetable impurities incidental to crowded populations. In addition to this surface pollution there was a constant underground sipeage from the contents of privy vaults, cesspools and underground drains with improper outlets. The water-supply, in many instances obtained from defective cisterns and wells, is rendered impure from these causes. These, in combination with other influences common to all cities with populations crowded together, in a climate requiring a period of residence for acclimation for many of its newly acquired citizens, were causes sufficient to account for the high death-rate accredited to Memphis. In addition to this, it being located about the centre of the Mississippi valley, on the direct line of water transportation from the North to the South, a railroad centre for long lines of roads, a commercial centre for an extensive radius of country, afforded a combination of interest to induce a large floating population, the migratory carriers of any infectious disease which might exist in the country. These are circumstances calculated to subject the place to severer tests of health preservation than ordinarily falls to the lot of cities of this size. By the census of 1870 the population was 40,226; whites, 24,755, colored, 15,471. The city limits were contracted March, 1870, before this census was taken, which was not commenced until June, 1870. It has been erroneously stated that this census was taken after the corporate limits were contracted.

By the census of 1880 the population was 33,526; whites, 17,690, colored, 15,836.

The total number of deaths for the first ten months to November 1 was 807; whites, 388, colored, 469, which makes a death-rate per 1,000 of total population 24.4; for whites, 19.1, and colored, 33.6, a decided reduction on preceding non-epidemic years, which I think may be fairly attributed to an improved sanitary condition, though this reform has not existed a sufficient length of time to state definitely what good results may be ascribed specifically to it, yet I think it may be fairly assumed that the death-rate will be reduced at least 25 per cent. during the next twelve months on those diseases which are regarded as preventable.*

This being conceded, the interesting question to the sanitarian arises, what has been done, and what is in contemplation for the future? The reforms necessary to meet the demands afford a field of operations, at once full of interest as a scientific problem and of vital importance to those interested from a business or social standpoint.

After the epidemic of 1873 more attention was paid to sanitary affairs. The Board of Health was reorganized, a voluminous health ordinance adopted, which seemed sufficiently explicit and comprehensive to meet the requirements; but whether from want of due appreciation of its necessity or from want of proper support by the law-making and executive power, practical results for good do not seem to have been accomplished. But this should not be charged upon

*Extract from Annual Report of Board of Health for Year Ending February, 1880. Death Rate Per Thousand Population.

Estimated at 40,000—One-third Colored.

Years.	Total Deaths.		Proportion to Population.	
	White.	Colored.	White.	Colored.
1874	643	546	24.1	40.9
1875	681	584	25.5	43.0
1876	666	612	25.0	45.1
1877	661	612	24.8	45.1
1878*	2,438	1,523	92.0	114.2
1879*	818	755	30.6	56.6

Years.	Proportion to Total Population.		Total Proportion.
	White.	Colored.	White and Colored.
1874	16.1	13.3	29.7
1875	17.0	14.6	30.2
1876	16.6	15.3	31.9
1877	16.5	15.3	31.8
1878*	60.9	38.1	99.0
1879*	20.4	18.9	39.3

*Epidemic years.

The above table is compiled from the official records of the health office, based upon a population of forty thousand, which was the estimate in 1870, as shown in the national census of that year; also by the City Directory of the past year, and as adopted by Hon. John Johnson, of the State Board of Health.

It makes the death-rate lower than reported by the National Board of Health, but that report was based on a population of 30,659, which, I think, is too low.

either the former city government of Memphis or its health authorities as designedly a dereliction of duty or as a want of due appreciation peculiar to them. The wide-spread and destructive epidemic of 1878 aroused an interest throughout the whole country previously unknown, and was the direct influence which created the National Board of Health.

Since then the interest developed in public and domestic hygiene has been greater than ever before in this section. Memphis being about the worst scourged place in 1878, and the only one of any note attacked in 1879, attracted especial attention, and the country at large in no unmeasured terms demanded that if there existed local conditions which induced or maintained this unfortunate susceptibility to epidemic disease, that no effort should be left untried to remove those conditions.

It being apparent that the further growth of the city or extension of its commercial interest would not only cease, but a rapid decline in all elements of wealth would follow, as a consequence of these recurring visitations of infectious disease, the practical question arose, what was best to be done, and that being decided, the best and most expeditious means of accomplishing the work? As some of the most lasting lessons are taught by saddest experiences, it seems that great and permanent good to Memphis will be the direct result of its reverses. Other communities have been benefited by the experiences of Memphis, and its example has afforded an impetus to city sanitation hitherto unknown.

That this interest in local sanitation, quarantine, and all subjects pertaining to public hygiene will be increased and develop a better understanding among separate communities, a greater facility in conventional action, a higher standard of hygiene throughout the country, there can be no question.

As above stated, the outbreak of yellow fever in Memphis in July, 1879, arrested the operations of the Board of Health in some of its work of sanitary reform, which had been indicated in a general way soon after it began to get practical results. These plans, though hardly commenced, embraced all the general principles which have since been largely developed and are in active process toward completion. Credit is due to the National Board of Health for facilitating this work by making a thorough inspection and sanitary survey of the whole city during the past winter and spring, and indicating specifically what was most demanded. During the progress of this inspection detailed schedules of nuisances and unsanitary conditions were made to the local Board of Health, which facilitated its work very much. In addition to the practical good accomplished it had a moral effect and enabled the local health authorities to accomplish more than otherwise would have been done in the same length of time. The leading features aimed at, and in the main accomplished in this sanitary reform, have consisted in cleansing the city of all objectionable accumulations and the prevention of re-accumulations by the operations of a public garbage service, which disposed of all such garbage by throwing it into the Mississippi River at a designated point below the city, where there is a deep and strong current at all stages of water; the abolition of all privy vaults, cesspools and im-

properly constructed underground and surface drains, and the substitution of a complete system of sewers and subsoil drainage-pipes; the destruction or renovation of unsanitary houses, the removal of the saturated and decayed wooden pavement, the improvement of the water supply, and a rigid enforcement of the health ordinance, both in regard to public and private property, including the improvement of bayou Gayoso, which affords the natural drainage for two-thirds of the western, the centre, and all of the eastern portion of the city. The character of the soil and general topography of the ground facilitated the construction of sewers and laying subsoil drainage pipes. For a detailed description of this system see a paper read by Col. George E. Waring before this Association, November 19, 1879, at its session in Nashville, and published in Vol. 5 of its proceedings; also supplement No. 3 to current number of National Bulletin of Health, February 24, 1880. See also in current numbers of the New York Sanitary Engineer for October 15, page 442, and November 1, 1880, page 647.

The practical working of these sewers is giving entire satisfaction, and, as far as I know, fully answering the ends claimed for it by its projector. The chief advantages of this system over the ordinary sewers of other cities are the economy in first cost, the prevention of sewer gas to its minimum, the exclusion of storm or surface water, and their facility in cleansing themselves, or in the prevention of the deposit of sewage matter in any portion of the pipe. The periodical flushing by an automatic arrangement of a flush tank placed at the head of each lateral six-inch pipe when it discharges, cleanses the pipe of all deposit if there should be any, thereby preventing any decomposition in the sewer.

Nothing but house-sewage proper is admitted into these pipes, storm-water being provided for on the surface, and all garbage carted away by the public garbage service. Collateral with these sewers are the subsoil drainage pipes, which have contributed greatly towards drying the ground. These pipes empty directly into bayou Gayoso. It may not be improper in this connection to state that many objections were urged against this system of sewerage, chief among which was the small size of the pipes, they being only four, six, fifteen and twenty-two inches diameter, its novelty being an innovation on all recognized systems, both in this country and Europe, it never before having been tried on a scale which was thought large enough to be a fair test of its practical utility to entitle it to a trial on so large a scale as the one in question. In other words, it was too much of an experiment for a people who had experimented to their serious loss with wooden block pavements. Objections of this character were urged:

The small size of the pipes, as compared with other sewers; what seemed to the average citizen a complicated network, a want of apparent durability, with expressions of general distrust in any system. These objections were from the non-professional—the average taxpayer. But the principle itself was objected to by professional engineers, whose opinions were based on observations in other cities, experience and theoretical knowledge. These discussions and a want of harmonious expression and concert of action, had its influence, and

much valuable time was lost in agreeing to any fixed plan. Since the commencement of work in January last, there have been completed and are in successful operation twenty-six miles of sewers, and thirty miles of subsoil drainage pipes, 145 flush-tanks, each with a capacity of 112 gallons of water, and which discharge into the upper ends of the six-inch laterals once in twenty-four hours. Every occupied house along the line of a sewer is required by ordinance to have proper connections, which embraces water-closets, slop-sinks, bath-tubs, etc. See house connections ordinance.*

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* HOUSE CONNECTIONS ORDINANCE.

SECTION 1. Be it ordained by the Legislative Council, That it shall be a misdemeanor to do, or cause to be done, any of the following acts, as herein provided; and any and all persons guilty thereof shall be fined not less than $1.00 nor more than $50.00.

SUB-SEC. 1. To uncover the public sewer for any purpose, or make connections therewith, or uncover the public connection branches thereof, unless and except by the consent, and under the supervision of the district engineer, or his duly authorized agent or agents, whose duty it shall be to insure full compliance with this ordinance in relation to connections; and a failure of duty in this respect shall subject such engineer or agents to all the penalties in this ordinance.

SUB-SEC. 2. To make, or cause to be made, any such connections, except as above provided, and by a competent and skillful mechanic, duly licensed to do such work by the Legislative Council, such mechanic not to be the agent of the district engineer. * * *

SUB-SEC. 3. For the owner or occupant of any building, any portion of which is used for any purpose during any portion of the day, to fail to have at least one water-closet connected with the public sewer fifteen days after notification from the engineer or president of the fire and police commissioners, and to fail to have such water-closet suitably arranged for use as a urinal, unless a separate urinal is provided.

SUB-SEC. 4. For the owner or occupant of any building in which food is cooked, or clothing is washed, to fail to have a suitable sink, slop-stone or hopper for the reception of waste water; provided, however, that if the water-closet is of a kind suited to such use, it may receive the waste-water, and the sink, slop-stone or hopper may be dispensed with.

SUB-SEC. 5. To throw or allow to be thrown or deposited on the surface of the ground in the taxing district, whether public or private, except in the proper and necessary manuring of the soil, any water which has been used for domestic purposes, or any liquid or solid fœces, or urine.

SUB-SEC. 6. To allow any surface-water, or rain-water from the ground or roofs of houses to enter any sewer or drain, or any vessel or slop-stone connected with any sewer or drain, or to admit any drainage-water from any cellar to a sewer; *provided*, however, that drainage may be provided in accordance with the regulations, plans and descriptions in the district engineer's office, and subject also to the restrictions of sub-section 1 of this ordinance.

SUB-SEC. 7. To use, or cause to be used, any house drains for any other purpose or purposes than those specified in this ordinance, except by special permission from the Legislative Council.

SUB-SEC. 8. To throw or deposit, or cause or permit to be thrown or deposited in any vessel or receptacle connected with a public sewer, any garbage, hair, ashes, fruit or vegetables, peelings or refuse, rags, cotton, cinders, or any other matter or thing whatsoever, except fœces, urine, the necessary closet paper and liquid house-slops.

And it is hereby made the duty of all citizens to aid the police in bringing offenders against this ordinance to punishment, and also to prevent breaches of the same.

Passed March 4, 1880.

D. T. PORTER, Chairman Legislative Council.

Attest: C. L. PULLEN, Secretary.

There has been completed 2,360 such connections. Under the old city government there were laid two and three-quarter miles of wooden-block Nicolson pavement, and five miles of stone pavement. Four and a half miles of sewers, which have about three hundred house connections, were constructed by individuals or private corporations.

These sewers do not enter into the general plan of sewerage, with which they have no connection, though they have been purchased by the city, and the same ordinance applies to them as to the new. They discharge by separate outlets into the Mississippi River opposite the city.

Since February, 1879, the organization of the present government, there has been completed seven miles of new stone pavement and six miles of wooden pavement taken up and thrown into the river, leaving four and three-quarter miles yet to be disposed of, which will be done as early as practicable.

There has been destroyed 189 houses, which were condemned by the Board of Health as being unsuited for either residence or business purposes and prejudicial to the public health, and as many repaired and put in proper sanitary condition. These houses were first inspected by the Board of Health, and afterwards by a committee from the Legislative Council, which ordered their destruction or renovation as circumstances justified. The work was done by the individual owners, and no compensation allowed.

The following is approximately the elevation of the city above high and low water mark:

Concord and Second Streets—4 feet above high water and 37 feet above low water mark.

Calhoun and Shelby Streets—70 feet above high water and 103 feet above low water mark; along bed of bayou, 2 to 30 feet above high water and 35 to 65 feet above low water mark.

Average rise of river from low to high water mark 33 feet, extreme rise 36 feet, fall of ground from Front Street to bayou Gayoso, on Madison Street, 40 feet; fall of ground from Front to Concord Streets 20 feet; fall of ground from Dunlap Street, the eastern boundary, to bayou on Madison Street, 48 feet.*

Length of bayous in corporate limits about five miles.

The water supply of the city is obtained from cisterns, and from Wolf River through the Holly system of water-works. The latter is used for drinking purposes to a very limited extent, though when properly filtered it is not objectionable for this purpose.

QUARANTINE.

Memphis can better afford to give up the commerce of the whole country south of it for three or four months of the year, for an indefinite period, than to be again subjected to a visitation of yellow fever. The experience of 1879 furnishes the first example in this country of a city of its size being depopulated, as far as practicable; having its population reduced from nearly 40,000 to about 14,000, more than two-thirds of which were blacks; of having every avenue of its commerce cut off, and every manufacturing interest suspended; of being

* From Engineer's office memoranda, furnished by Assistant City Engineer, A. J. Murray.

surrounded by a line of pickets to prevent either ingress or egress, only so far as was thought absolutely necessary; to be quarantined against by the whole country outside of it for more than three months, and having its citizens regarded with distrust and suspicion wherever they went, and to lose, in material wealth and reputation, what it will take years to regain. Even after the epidemic was over, many who formerly purchased goods there were afraid to resume their former commercial relations with her merchants for fear of conveying to their homes the dreaded infection. But this is not all. The depreciation of her real estate was such that it seemed for a time no one would touch it at any price. In the light of its terrible experiences, both in reputation and material wealth, as a community it can afford to take no risks, and when there is doubt as to existing danger, any action had better be in favor of what might be decided as the safest course, though this may result in temporary non-intercourse.

The commercial advantages arising to Memphis from an infected place bears no comparison to the disadvantages incident to the danger of infection from such place. The prevention of a recurrence of epidemic disease of any character, and the maintenance of the best possible sanitary condition is with the authorities of Memphis their first duty. Not only further progress and development of the city depends upon it, but a preservation of its present advantages and the prevention of a rapid retrogression. No people have a stronger cause than those of Memphis to properly appreciate the inconveniences of inspection impediments and quarantine restrictions.

The irreparable losses of 1878 and 1879 are too fresh with them to incur any risk when they have well-grounded reasons to apprehend danger. I assume that every epidemic of yellow fever which has occurred in Memphis has been the outgrowth of importation from the South, and, as far as I know to the contrary, from New Orleans, with, perhaps, the single exception of 1879, which I have been unable to trace to an outside source, though, in my opinion, that was a recrudescence from the old importation of 1878, which was traceable to New Orleans.*

The theory of the etiology of yellow fever in New Orleans is a subject on which it seems the profession there is divided.†

From 1817 to 1878, a period of sixty-one years, with the exception of four years, as shown by official records, the disease has prevailed there to a greater or less extent.‡

Its spread is seemingly more influenced by certain meteorological conditions and susceptibility of material than by artificial restrictive measures. Though the disease was originally exotic to the whole gulf coast, it is now a questionable point whether or not, from re-

* See paper in vol. 5 of Public Health Reports and papers on the Yellow Fever Epidemic in Memphis, 1879.

† For an interesting account of the history of yellow fever in New Orleans, see "Tableau of the epidemic of 1853, with topographical, chronological and historical sketches of the epidemics of New Orleans since their origin in 1796, illustrative of the quarantine question," by Bennet Dowler. M.D.

‡ See New Orleans *Medical and Surgical Journal* for March, 1879, page 699, article by Dr. Joseph Jones.

peated importation and frequent recurrence, it has not become so engrafted as not to be justly classed as one of the endemic diseases of that locality.

That New Orleans is a standing menace to the country along the Mississippi River for several hundred miles north of it for at least three months of the year, there is no doubt in my mind. It is unfortunate that the question of the indigenous origin of yellow fever in New Orleans cannot be definitely settled. This point is left decidedly obscure in the conclusions of the board of experts authorized by Congress to investigate the yellow fever epidemic of 1878. See paragraphs 26 and 27, page 15, of that report.

In discussing the epidemic of 1878 Prof. Joseph Jones, who was thorough and exhaustive in his investigations of the origin of that epidemic, likewise leaves this interesting question unsettled. On page 698, New Orleans *Medical and Surgical Journal* for March, 1879, he uses the following language: "It seems possible * * * * that the disease may have been imported, and also of local origin." In the February number of the same journal for 1879, page 609, appears an extract from vital statistics of New Orleans from 1790 to 1874, by Prof. Stanford E. Chaille, who was a member of the board of experts above alluded to, which is decidedly more positive on this subject. He says: "That New Orleans has the capacity to originate yellow fever just as well as Havana or Rio de Janeiro, is an assertion which I deem indisputable, and which was often made by the deceased Prof. Stone, whose ability, as also his experience in this disease, were unequaled in this city."

On page 614, same journal and number, appears an extract from the official report of Dr. Smith, President of the Board of Health, in regard to the origin of the epidemic of 1867, in which he affirms that "the Board was unable to trace its introduction from without in the first case." To quote still further from this article of Prof. Jones, "in 1869 the yellow fever clearly originated in the shipping. In 1870 there were 587 deaths from yellow fever, but a direct communication with foreign importation was not established to the entire satisfaction of the profession, unless it should be assumed that the disease had been introduced by the first case. In 1873 it was admitted officially that yellow fever was introduced by the bark *Valparaiso*. In 1874 twenty cases of yellow fever occurred, but these were not traced to any foreign origin.

In 1876 the origin of the disease could not be traced to foreign importation. Official records show deaths from the disease in 1877, 1878, 1879, and 1880.

As a matter of fact, the disease appears there every year. Whether it is due to local causes, and arises spontaneously, as any endemic disease would, or is from importation, is immaterial to those outside of New Orleans. The specific poison of the disease is the same, and the danger of its transmission to and affecting another community susceptible to its influence is not diminished by its being endemic to or imported into New Orleans. Upon the recrudescence of the disease from a preceding epidemic, the commission of yellow fever experts above alluded to is decidedly non-committal, and leave this yet an open question. (See paragraph 27, page 15, report.) It does not

necessarily follow that an epidemic must exist in a place in order to become dangerous to other communities. An epidemic may occur in Memphis, the result from infection from New Orleans, though the disease may not reach to that extent there. That the quarantine regulations below the city are notably defective, it seems there is no question. Upon this subject Prof. Jones makes the following comment, illustrative of the inefficiency of the quarantine regulations up to 1879, the date of his paper, New Orleans *Medical and Surgical Journal* for February, 1879, page 616: "Quarantine should not only command all the outlets and inlets to New Orleans, but all vessels from infected ports should either be entirely excluded, or else the cargoes should be landed at the quarantine station, and should be thoroughly fumigated, and then transferred to lighters, to be transmitted to the city. Upon no consideration should a vessel from an infected port be allowed to come up to the port of New Orleans. Vessels trading with Southern ports liable to be affected with yellow fever should be constantly under sanitary police.

"A medical officer should accompany the vessel and superintend the crew in the infected port, and disinfect the vessel in port and upon the voyage, and see that every proper sanitary measure be instituted. An imperfect quarantine, such as now exists at the outlets of the Mississippi River, has been a sham and a delusion. The question of the foreign and domestic origin of yellow fever should be determined by an absolute quarantine." The inefficiency of the quarantine during the past summer is exemplified in the fact that the bark *Excelsior* was allowed to pass up to the city in July with yellow fever on board; also by the action of the Louisiana State Board of Health, finding it necessary, as late as August 19, to enforce additional rules governing the administration of the quarantine.*

In view of the above facts and opinions, coupled with the prevailing opinion that on every occasion of yellow fever outbreak in Memphis, with the exception of 1879, the disease has been traced to infection from New Orleans, which is proven by its own official records to be more or less infected every year; and it is impossible for one at a distance to determine the extent of danger incident to that infection. I submit that it is the duty of the health authorities of Memphis, and also of the State of Tennessee, to adopt such precautions every year as may be thought compatible with the preservation of the public health, with the minimum amount of inconvenience to commerce, but to guard against the danger of a repetition of infectious disease from this or any other source. While it may not be practicable, if indeed necessary, to maintain a quarantine at the present station below Memphis against New Orleans, or places south of Memphis, such as Prof. Jones, now President of the Louisiana State Board of Health, suggests should be maintained below New Orleans, the Memphis quarantine should be placed in commission every year by the first of June, and such precautions instituted as may be deemed best. On May 7th last, the National Board of Health was petitioned by the Memphis Board to place on duty at New Orleans, and such other ports as might be deemed necessary, an inspector, whose duty it should be to

*See New Orleans *Times* (newspaper) of August 20, in which appears official proceedings of the Board of Health.

supervise the shipment, by river or rail, of all goods, merchandise, baggage, etc., and to advise by telegram the resident member of the National Board at Memphis whenever such goods were believed to be infected, or in any way dangerous to the public health, that he might promptly notify the Memphis Board of the shipment of such goods. This request was promptly complied with, and an efficient inspection service organized and maintained as long as it was deemed necessary. The quarantine station, located eight miles below Memphis, on the foot of President's Island, the property of the city, was turned over to the National Board, under the charge and at the expense of which it was maintained from May 18 until October 1. For detailed account of station during that time, including inspections, expense, etc., see official reports made by officer in charge to National Board of Health.

Until the question of the etiology of yellow fever is settled in New Orleans, which can only be done by an efficient quarantine, it is impossible to determine when a place which has commercial intercourse with New Orleans is safe from infection during a season of the year when the atmospheric conditions are such as to be favorable to the spread of the yellow fever poison when introduced into that place. Therefore, with the present administration of Memphis, I think I can foreshadow the future policy to be pursued in dealing with this question. A quarantine of observation, with a strict inspection service, both by river and rail, over freights, passengers and baggage, will be maintained, and if it should be deemed best, which is not improbable, would be, under the circumstances of existing epidemic, an absolute non-intercourse as far as it is practicable to enforce it. This may seem to be very ultra ground, but I think I express the prevailing sentiment of the government and people I have the honor to represent. In saying this I do not wish to be understood that the Memphis Board of Health does not propose to co-operate with the National and Tennessee State Boards, or that of any sister State, or that I am an advocate or apologist for the arbitrary and apt-to-be-oppressive policy known as "shot-gun" quarantines, or that I do not adequately appreciate the obligation imposed upon a Board of Health by the legislation which created it to preserve the public health with the minimum amount of inconvenience to a State or community, or the public carriers passing through a State. I apprehend fully that the first duty of a Board of Health is to protect and preserve the public health. But in discharging this duty it is not contemplated to compromise any of those industries which contribute to the material interest of that community, or interfere with legitimate interstate commercial intercourse only so far as it may be essential to the end in view. Circumstances may arise, and during the prevalence of epidemics a well-founded apprehension of danger from infectious disease, that in order to perform this duty individual interest or the interest of a corporation regarded as an individual must suffer. But when such is the case the circumstances demanding such sacrifice should be apparent. Extreme measures of restriction, or stamping out, as it is technically termed, involving individual losses, are to be deprecated, and in order to prevent the necessity for such measures a proper anticipation from which should result properly enforced preventive

measures. The obligation of ascertaining when danger exists and the best course to pursue in guarding against it without infringing upon the vested rights of individuals or communities is the problem for a Board of Health to solve.

It is impossible for a local Board to discharge intelligently and satisfactorily either the duties of local sanitation or quarantine restriction unless it has the positive support of the government which commissions it, with the moral support and co-operation of the community in which it operates.

Memphis, November, 1880.

THE STORM-WATER QUESTION IN RELATION TO SEWERAGE.*

By Col. Geo. E. Waring, Jr., of Newport, R. I.

One of the most important questions now before the sanitarian, and very much the most important before the sanitary engineer, is the question of the best methods for disposing of the surface water of cities and towns; that is, of the rain falling on the natural or unimproved surfaces, on the paved area, and on the roofs of houses.

The direct bearing of this question, relating to the degree to which the soil is to be made wet, and the degree to which organic impurities on the surface are to be washed away or to be concentrated in depressions, affects directly the healthfulness of the community. Aside from all sanitary considerations, there is a very important one on the side of convenience, and of the protection of public and private property from injury by floods. That this water must be got rid of, and that it must be got rid of in such a manner as to do the least possible harm to the health of the community, and with the least practical cost, is a fundamental fact to be borne always in mind. Economy and convenience are sure to assert their importance in any consideration of the subject. The sanitary effect of the method of removal adopted is not so sure to command attention, but it is very sure, sooner or later, to assert its influence.

I have been led by circumstances to give especial attention to this subject for a number of years past. I began, as any student of engineering would naturally begin, by accepting as inevitable, or at least as most injudicious, the methods of disposal universally adopted. I have ended, as I believe most intelligent and fair-minded men must end, after a careful consideration of all of the arguments bearing upon the case, with the conviction that the prevailing practice has been radically wrong, and that simplicity, economy, and, above all, the best observance of sanitary requirements, demand in almost all cases, if not, indeed, everywhere, an absolute separation of household and manufacturing waste from the surface flow.

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* Read before American Public Health Association, New Orleans, December 7, 1880.

The almost universal custom concerning the treatment of storm-water in sewered towns has been a very natural outgrowth of circumstances. The first sewers were simply natural water-courses, covered over or continuously bridged to obviate their interruption to traffic and to protect their channels from the reception of garbage and filth. As the paving and roofing of the area increased, the flow of storm-water became more and more rapid, with the natural result that this discharge was delivered into the covered channels to get it out of the way. To secure a further extension of this convenience, underground branches of these water-courses were laid to other parts of the occupied area, until a more or less complete network of covered drains resulted.

The annoyance from the accumulation of foreign substances admitted to these rough channels led to the paving of their bottoms and the walling of their sides, and gradually, through various improvements of form, to the large brick sewer of modern times, and, for minor extensions of the system, to the use of pipes of large diameter.

It is only at a comparatively recent day that the almost universal restriction concerning the admission of filth to these sewers was withdrawn, and that they came to be used for conveying the wastes of human life. The withdrawal of this restriction was about coincident with the introduction of water supply and of the system of water carriage for the drainage of houses. No other vehicle for removing household wastes is so convenient nor so cheap as aqueduct water, and the facilities for its discharge which the large sewers afford are sufficiently good to secure the transmission of our off-scourings more or less completely to a distant point.

We have, through long practice, grown up with the belief that deep sewers are necessary for the removal of storm-water, and this necessity being conceded, we have not unnaturally sought to avoid the mistake of cutting a big hole for the cat and a little one for the kitten, by turning both sewage and storm-water into the one large channel. This seems the simplest way to accomplish the end, and it has the sanction of a sufficient antiquity to have commanded general adoption.

In discussing this subject we should try to divest ourselves of the influence of preconceived opinions and of universal habit, and look at it in all its various bearings. The large sewer is the outgrowth of a desire to get rid of surface-water, and incidentally of so much of the soil-water as is likely to make our cellars wet. It had in its inception nothing whatever to do with the removal of filth from houses. This further duty has been thrust upon it simply because it was capable of performing it without the expense and complication that would attend the introduction of a separate set of works.

In 1842 Mr. Edwin Chadwick, the father of sanitation in England, a most intelligent man, but not a professional engineer, made the suggestion and supported it with strong arguments, that household wastes and matters of like character should be provided for by a separate and distinct system of pipes. He has long been supported in his opinion by Mr. Robert Rawlinson, C.B., now the engineer of the local board, and beyond question foremost in his profession in Eng-

land. Practically, no considerable amount of public work has been carried out in accordance with the suggestions of these gentlemen. Communities are slow to try experiments in engineering, and the force of precedent has such effect nowhere else as with the class of minds usually charged with the regulation of municipal affairs. Indeed, it is not clear that the few attempts made in England to carry out the separate system have been altogether satisfactory. The storm-water sewer of the improved modern form has at least the advantage that, from time to time, it receives very copious flushing from the rainfall, so that usually before obstructions accumulate to such a degree as to choke the channel completely, there comes a storm of sufficient volume to wash out the deposits and give the sewers a fresh start. Sewers constructed for the removal of foul sewerage only, and without special means for flushing, are quite sure, however small, to become more or less filled with accumulations, especially near their dead-ends. Consequently, in the state of the art a very few years ago, there was good reason for hesitating to accept the suggestion for a separate system, and to adhere to a plan which, whatever its faults, had the advantage of always working with tolerable certainty, and moving along our off-scourings toward an ultimate outlet.

That the state of the art has entirely changed within the past decade, and that the arguments formerly obtaining against the separate system are no longer valid, I shall propose to show in good time. Let us first consider what are the objections to the present mode of disposing of surface-water by its admission into deep underground sewers, traversing every street of the town.

One office of a copious rain-fall, one effect which it is sure to produce, is the removal of accumulations of earth and organic matter from the surface of the street. These two very different substances are carried forward together, and are delivered, often at every street corner, into a catch-basin, which quiets the flow, and permits the solid substances that it carries to be deposited. The completeness of the deposit is proportionate to the volume of the flow, and to the specific gravity of these solid matters. So much of the dirt as is carried off from the surface of the street by a light rain, is quite completely deposited in the slightly disturbed water of the catch-basin. If the storm is more severe the erosive action of the surface water is greater; more solid matters are carried into the catch-basin, and the commotion of the ponded water removes a much larger portion of the lighter and finer substances. Little by little, as time goes on, these deposits accumulate in various strata of fine dirt, involved organic matter, coarse gravel and much incidental rubbish. Once firmly settled in the catch-basin, the material remains until removed by hand. While so remaining, its organic portions undergo decomposition with an insufficient ventilation, and produce resultant gases of an offensive and more or less dangerous character. These gases, especially during protracted seasons of drought, manifest themselves to the senses of all who pass or who live near to their source. The catch-basin almost invariably has some form of trapping device, depending upon the interposition of a water seal. In dry weather the water is evaporated, the seal is broken, and an escape is afforded for the air of the sewer.

During a rain the water flowing from the catch-basin into the sewer carries greater or less quantities of foreign substances In a light rain it may be mainly the coarser and lighter parts of the horse droppings which so pass. During heavy rains a greater disturbance of the water causes the removal of more of the deposit, some of this being already in an active state of decomposition. All of these solid substances pass into the sewer, from which they are completely or partially removed, according to the exactness with which its scouring quality has been developed in its original construction.

For the sake of uniformity, more than for any sounder reason, this system of storm-water removal is not confined to those parts of the town where storm-water may ordinarily become a source of annoyance or of danger to property, but is made to apply universally to every part of the town, the catch-basins being placed so near together that in an ordinary rain, the flow through the gutters is not sufficient to remove anything like all of the filth; much of it is swept together into local deposits, which, under our American system of street-cleaning, remain for an indefinite time, and which are offensive, if not injurious, so long as they do remain.

It is usual in constructing a plan for the sewerage of a town, to arrange for the removal of a certain proportion of the water of storms of a certain amount, what is in excess of this amount being got rid of by storm-water overflows. If the amount of rain-fall which it is arranged to remove is very small, the purpose is only incompletely attained; if the provision is for the removal of a large rain-fall, then the sewers are necessarily too large to be cleansed by lighter rains, and the larger sewers of the system, unless of very steep inclination, are very sure to accumulate deposits to a considerable amount. These deposits are less favorably circumstanced as to ventilation than those in the catch-basins; and, while it is by no means universal, it is very general for the larger sewers to be, except immediately after heavy rains, very foul with accumulations of organic matter, undergoing a decomposition which produces the "sewer-gas" with which we are so familiar. There is doubtless a very considerable production of sewer-gas due to the deposits of street-wash alone; but when we add to these deposits the adhering filth derived from our house-drains, its character is very much aggravated, and the resultant gases become much more pernicious. The confined air of our large, unventilated city sewers is rich in the products of this combined decomposition.

It is a favorite theory with engineers that complete ventilation will render these gases inoffensive and harmless; theoretically this may be true; practically it is not true, for the reason that the complete ventilation of a large storm-water sewer is impossible. The truth of this statement is very clearly established by the condition, especially during warm weather, of the Fourth Avenue tunnel in New York. This is a large underground roadway, less than half a mile in length, and containing two railroad tracks. It is entirely open at each end, and its course is in the direction of the prevailing winds. Its roof is pierced with a constant succession of large openings, from probably eight to twenty feet in diameter, opening directly to the sky. The constant passage of cars in both directions must act as a very important source of movement in the air. The utmost care is taken to keep

the road-bed clean, and the walls and roof are whitewashed with great frequency. Disinfectants are freely used, and every effort is made to secure a pure condition of the atmosphere. The result is as nearly as possible a total failure, and at times the whole atmosphere of the channel is absolutely sickening. If no better result can be secured under these most favorable circumstances, what are we to expect of a sewer four or five feet in diameter, deep in the ground, foul from end to end, and with no other means of ventilation than a dozen small holes in the covers of manholes at intervals of 300 or 400 feet? The condition that we actually find under such circumstances is, almost without exception, unqualifiedly bad. The suggestion has been made, that these sewers may be kept safe and sweet by dispensing with the traps on house-drains, and furnishing ventilation through the soil-pipe which extends from every connection. So far as the sewer is concerned this would doubtless mitigate the difficulty to a certain degree; but it is certainly of very questionable propriety to establish such a source of foulness as the decomposition of the filthy deposits of a sewer, and then to attempt to alleviate the difficulty by carrying the extremely offensive gases through our soil pipes.

The ingenuity of the engineering profession has exhausted itself in attempting to get rid of the effect of sewer gas when once it has been produced. We have never yet reached anything better than the terse recommendation of a London authority to the effect that "we must let the stink out into the middle of the streets."

The conditions by which the world was driven to this very unsatisfactory result were, under the old systems of flushing, substantially unavoidable, and what has been done in the way of city sewerage has been in the direct line of progressive improvement. It seems to me that the time has now come when a new departure should be taken, and when the sewer gas difficulty should be met by prevention, rather than by attempts at cure. It is clear that under the present combined storm-water and foul sewage system prevention is simply impossible. The production of foul gases is one unavoidable attendant upon every application of that system. All that is to be said on the other side is, that to withdraw the flushing effect of storm-water, and to leave household wastes to take care of themselves in small pipes, would result simply in aggravation of the difficulty.

Fortunately within the past few years the conditions of the problem have been radically changed. Formerly it was restricted by limitation in the matter of flushing. Small pipes could not safely be used for sewage proper to the exclusion of storm-water, because storm-water was needed to flush them out. This statement of the case is practically true, although not strictly true. Flushing by means of manholes at the heads of the lines, into which water was to be poured, or where a tumbling tank might be set, or flushing by means of various manual operations, all made the use of small pipes possible, but left it very undesirable, inasmuch as it is always undesirable to rely on manual operations or on the action of moving mechanism to keep sewers in condition. It is therefore quite proper to say that the possibilities of the art of sewerage underwent a radical change on the invention of Rogers Field's annular siphon for emptying flush-tanks. This invention, which includes no moving

parts, and the action of which is positive, makes it possible for us to accumulate the flow of a stream yielding not more than five gallons per hour until it shall have filled a tank or reservoir of any desired size, with the certainty that the continued flow of the same stream, after the tank shall have become full, will cause the whole accumulation to be discharged into the head of the sewer with such rapidity and force as to give it an effective flushing. It is now entirely safe to use pipes of as small size as the quantity of the sewage will permit, and recourse to storm-water flushing is no longer necessary.

Therefore the question of what we are to do with storm-water presents itself in a new form. It seems to me very clear what we are not to do with it; that is, that, in my opinion, we certainly ought not to admit it to sewers which are in connection with the drains of houses. While the impurities of storm-water are by no means the chief *factor* in the production of sewer gas, the admission of these impurities to sewers is undoubtedly the most serious *cause* of its production. Fœcal matter carried completely through the sewers and discharged at its outlet within a few hours of its admission would do no especial harm; but fœcal matter added to the accumulations of mud and sand and sticks and rubbish strewn along the usual large brick sewer, in the absence of daylight, and practically in the absence of ventilation, is so situated as to produce its very worst effect.

Therefore, as I have just observed, the question, What shall we do with storm-water? is the most pressing question in sewerage engineering at this time. Our practice has been almost universally to deliver it into deep sewers. This, I venture to say, is generally a mistake, and is almost always quite unnecessary. Proper provisions being made for the drainage of the subsoil, our only care with regard to the rainfall is to provide means by which it shall escape without material inconvenience to traffic; that in its escape it shall wash the street gutters, and that the greater storms shall not harm public and private property. There is nothing in the nature of rain-water which makes its temporary presence on the surface of the ground injurious to health. There is no reason why it may not be discharged over the surface of the streets and along the gutters, provided its volume is not so great as to interrupt or seriously to interfere with traffic. Therefore, as the roadside gutters are in full view, and may easily be kept clean and in repair, there is no reason why the water which falls from the heavens may not flow through them for at least so far as they are able to keep it within bounds. Sooner or later, in the larger cities, the water of copious rains will get beyond its bounds, and the flow of the gutters will spread out over the street or will rise on to the sidewalk. After the discharge of a certain amount of gutter has accumulated, there may be danger, during violent storms, of injury to the pavement, of the filling of cellars, or of serious interruption to travel. Then, but not until then, it will become necessary to carry the flow below the surface of the street and lead it safely to a safe point of outlet.

Now, there is a great difference between carrying storm-water underneath the surface of the ground and only at points where there is danger of some flooding, and the present practice of carrying the

whole rainfall from the hill tops as well as from the valleys first into foul and costly catch-basins and then into deep and costly sewers. In my judgment the latter course is, to use the mildest expression, unscientific and unpractical; while the other fulfills the best requirements of common sense. If the art of town drainage had never been practiced, and if the proposition were made for the first time to Mr. Chesbrough, or to Mr. Lane, or to Mr. Moore, or to Mr. Shedd, or to Mr. Philbrick—all skillful engineers—I am sure that it would never occur to one of them to get rid of it by channels from ten to twenty feet below the surface of the street and extending under all the streets of the city. It has been led there only by the conditions under which the work of sewerage has been developed. The occasion for its being taken there no longer exists, and an entire reformation in this part of the work is demanded.

It would be absurd for any one at this early day to prescribe any substitute for the old practice as being the best; all that it is safe now to say is that storm-water should be kept on the surface of the streets as long as possible, and that when its accumulations must necessarily be carried beneath the surface, they should be carried only to such depth as is requisite to get them out of the way and to prevent the filling of their channels with ice during slight flow in cold weather.

It will probably be a very long time before we arrive at the perfection of this method of delivery. We shall have annoyances of various sorts, and we shall doubtless encounter some serious difficulties in the matter of the crossing of streets. Until some substitute is devised for depressed gutters we shall receive a certain amount of unfavorable comment from those who enjoy a level and uninterrupted roadway. Let us remember, however, that all of these drawbacks relate solely to the personal convenience of the people, and that they involve no serious dangers. That we may not be appalled by the idea of creating such annoyance let us consider for a moment the other side of the question. Leaving now entirely aside all consideration of sewer gas, the cleansing of large sewers, etc., think for one moment of the effect of the rapid delivery through sewers of storm-water which, if flowing more slowly through the street gutters, would do no material harm; think of the gorging of the large sewers of Providence, and the back flow of sewage matter through the kitchen sinks and basement water-closets of some low parts of that city; think of the vast trouble of a similar kind that has occurred in Brooklyn, where not only have the houses themselves been invaded by sewage matter during heavy storms, but where the manhole covers have been lifted and the torrent has poured over the surface of the streets and of the sidewalks; think of London, the theatre of the proudest achievements of the drainage engineer, a city whose intercepting sewers are a model for the world, and all of whose ills were supposed to have been cured by Sir Joseph Bazalgette's achievements—but where, alas for the hopes of the engineer! he has been, if not hoist by his own petard, drowned in his own sewage.

Camden Town, Kentish Town, and other parishes are crying aloud for relief from the stinking floods with which the new sewerage system is deluging their poor inhabitants. The storm-water system has been got rid of with a vengeance. It has been robbed from the sur-

face of the streets where it would have done good sanitary service in flushing the gutters, and has been delivered into sewers of great velocity to accumulate at the lower levels far beyond the capacity of the pumps to remove it, and has become the curse of the wide, low-lying areas, where but for the sewers it would at least have arrived so gradually as to have done infinitely less harm.

In closing, permit me to formulate my opinion on the subject by saying that the present manner of disposing of storm-water in sewered towns by removing it from the surface where it is needed, to the sewer where it creates a nuisance, is a "relic of barbarism," and—I beg that my respected friends of the engineering profession will forgive me—that its continuance indicate an over-riding of reason by tradition.

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THE RELATIONS OF SCHOOLS TO DIPHTHERIA AND SIMILAR DISEASES.*

By H. B. Baker, M.D., Secretary of Michican State Board of Health.

A disease which in one year (1859) caused in England over 10,000 deaths, in another year (1873) over 1,000 in New York City, for each of two successive years in Massachusetts over 2,000 deaths, which for the eight weeks ending with November 13, just passed, caused an average of forty deaths per week in the city of Brooklyn alone, and which, when once introduced into a city or State, does its work year after year with varying but with certain effect—a disease which, for the last twenty-three years, has been gradually extending itself over the whole northern belt of our country, and which declines only to rise again in periods of four to ten years—is a disease whose ravages are no less terrible than those of yellow fever, and which demands the attention not only of local but of State and National Boards of Health.

Perhaps the first question which the title of this paper will suggest to some minds may be, whether diphtheria has any necessary or common relation to the schools. Bearing in mind the numerous cases on record where diphtheria has undoubtedly been conveyed from person to person, some may be ready to assume that there must be danger of spreading diphtheria if children affected with the disease attend the public schools; yet very little attention seems to have been given to this subject, and comparatively little has been done toward the prevention of the spread of diphtheria in this manner. Among a certain class of sanitarians the tendency of thought on the subject seems to be similar to that which prevailed a few years ago with reference to scarlet fever, when the nature of that disease was not as well understood as it now is; outbreaks of which were then frequently attributed to sewer-gas, or to decomposing organic matter in some form. Now we do not hear much of the filth origin of scarlet fever,

* Read before American Public Health Association, New Orleans, December 9 1880.

or even of the propagation of the disease in that manner. It is a generally accepted fact that the contagium of scarlet fever is reproduced in the body, and, so far as I know, there is no *conclusive* evidence of its reproduction outside the living body, in filth or in cultivation fluids, such, for instance, as Pasteur's solution. I suppose there is hardly a person present who doubts the communicability of scarlet fever, or who doubts its ready communication by and to children in schools. If this is so, it is unnecessary to offer further proof on this point; but though this is well and generally understood with reference to scarlet fever, it seems to me that, though true, it is not generally understood as regards diphtheria; consequently I venture to offer evidence on the subject of the mode of spread of diphtheria as essential to a knowledge of the relations of schools to diphtheria. Part of the evidence offered in this paper is direct, and part of it is indirect; the indirect evidence, relating mainly to the most frequent mode of the spread of diphtheria—as to whether it is generally by contact with something derived from a previous case, or whether the cause of the disease is capable of being reproduced or multiplied in filth outside the body; for which latter hypothesis the evidence seems to me to be mainly negative or inconclusive. The bearing of such evidence on the subject of this paper is manifest, because diphtheria is known to affect children at the school ages, and if the disease is generally communicated from person to person, the relations of schools to the disease must be very important; on the other hand, if diphtheria is, as some have supposed, a "filth disease," affecting children more than adults, the relations of schools to diphtheria may yet be of importance, because the sanitary arrangements of schools are not always, perhaps not generally, good.

IS DIPHTHERIA A FILTH DISEASE?

Such paragraphs as the following are frequently seen:

"The health department of Chicago has been examining the sewerage to houses where deaths had occurred from diphtheria, and find it defective in 70 per cent. of the cases reported."

The inference from this apparently is, that some useful statement is made; but to me the statement seems barren, because nothing is said of the proportion of houses with defective sewerage where diphtheria did not prevail. Of what use is it to know that the sanitary conditions were bad where diphtheria prevailed, if we have no means of applying the fact, no knowledge of the conditions in localities where it did not prevail, and no knowledge of the conditions in the same place before and after it prevailed? There can be no intelligent study of the subject in this direction until we have complete sanitary surveys of the cities or localities in which diphtheria is to be thus studied.

But even if, after we have positive knowledge, it turns out that diphtheria is more prevalent or more fatal in filthy localities, it will then remain to be ascertained whether the filth is a cause or only a frequently coincident condition, and the disease prevail most, just as small-pox does, among the most improvident classes.

The experience with diphtheria at Pittsburg, Pa., where the disease followed somewhat closely the course of a filthy sewer, proves nothing of itself when we consider that any communicable disease tends to follow streets or other lines of easy communication, and to spread in thickly-settled places. It is needful to have a great many repetitions of such experiences, and to eliminate the effects of other known causes in order to reach conclusions respecting the relations of filth to diphtheria. Meanwhile it is, in my opinion, premature, to say the least of it, for sanitarians to teach people that diphtheria is certainly a filthy disease. Prof. Huxley, in his address at the dedication of Sir Josiah Mason's science college, in speaking of scientific training, has lately said: "It warns us that the assertion which outstrips evidence is not only a blunder, but a crime."* Certainly, if this is true in any science, it is in sanitary science.

It may yet be well to consider some evidence tending to show that filth may sometimes prevent diphtheria. The statistics of sickness collected by the State Board of Health in Michigan, and the statistics of deaths in the same State, both show, in connection with the meteorological statistics in that State, that diphtheria has very strongly marked relations to meteorological conditions. One of the diagnoses which I submit herewith has been prepared to show something of the relations of sickness from diphtheria to meteorological conditions in Michigan. It gives for the three years, 1877–79, the per cent. of the weekly reports of sickness which stated diphtheria to be present, the reports coming from an average of about sixty localities in Michigan. It has been proved, to my mind at least, that diphtheria prevails most in Michigan when the air is cold, dry, and contains an excess of ozone. There is reason to believe that ozone sometimes irritates the air-passages, and that it may tend to induce a condition of the throat susceptible to the cause of diphtheria.

Professor Kedzie, Vice-President of this Association, has pointed out that the ozone which is apparent by our tests, is "residual" ozone, that which is left after its oxidation of whatever in the air is capable of oxidation. From this it follows that, as a rule, other things being equal, ozone is most abundant where it has least filth, or substances which it can oxidize. This evidence seems to me important, because it appears to explain why, in certain cases which I have myself observed, the ruddy, rosy-cheeked children, frequently bathed, and in cleanly houses, have been among the first to succumb to diphtheria, contracting the disease after some unusul exposure in the open air. If the facts are, as I think the evidence indicates, it is important that they be known in connection with the subject of the ventilation of schools; for a system of ventilation which might greatly lessen the filthy exhalations in a school-room, might yet, by bringing in air too cold and dry, and too strongly charged with ozone, cause much more sickness than it prevented, if it favored the spread of diphtheria, or any other similar communicable disease.

THE IMPORTANCE OF STATISTICAL EVIDENCE.

Statistical evidence, such as the greater part of that in this paper, may not be as conclusive to some persons as would be evidence of

* *Nature*, 1880, page 547.

direct experiment as to whether diphtheria can be communicated by filth, and as to whether the contagion can be reproduced in filth or in Pasteur's solution; but it must be admitted that statistical evidence is at least as important as any other; for even if direct experiment shows positively that the contagium can be reproduced in filth, it would still be an open question whether it is generally so reproduced, and the disease spread in that manner; so that in the end we must rely on statistics of sickness and of deaths from this disease, and statistics of coincident conditions for accurate information of the facts in the case. We need direct experiment on this question by competent persons, but the immediate value of the evidence which we may get therefrom will depend greatly upon what answer is reached; for if the experiments show that the contagium cannot be reproduced outside the body, the fact is important without further work; if they show that it can be reproduced, we must fall back upon other evidence, and preferably upon statistical evidence, as to whether it is thus generally reproduced and spread.

Diphtheria is more fatal to children than to adults. Children also seem to be more susceptible to the disease. These same statements are now true of scarlet fever, measles, whooping-cough and chicken-pox; and previously to general vaccination, the same statements were true of small-pox.

These two facts should be kept in mind by all who experiment with a view to producing diphtheria in animals, otherwise no satisfactory results need be expected.

In Michigan, at least, the proportion of deaths reported of children between the ages of five and ten years, compared with the deaths of those under five years of age, is considerably greater in the deaths from diphtheria than in those from scarlet fever, croup, diarrhœa, or any of the diseases which particularly cause the death of children. In my mind the question arises whether diphtheria is spread less than is scarlet fever by aërial dust, which reaches children under five years of age by way of infected clothing, or whether this greater proportion of deaths from diphtheria among children over five years of age may not be because children over five years of age attend the public schools, and diphtheria is spread more than is scarlet fever by such contact as there occurs.

In this country, at least, diphtheria seems to have prevailed more in the cold than in the warm latitudes, more in winter than in summer. This is true of scarlet fever; it is also true of small-pox. The explanation does not seem to me to be difficult, if we suppose diphtheria and scarlet fever to attack the body where they seem to attack it, namely, at or near the entrance to the air-passages. Any one who has lived in a cold climate in the winter knows how much more liable one is in cold weather to have sore throat, "chapped" lips as well as chapped hands, influenza, etc., all of which conditions supply a rare surface for the reception of the contagion of a disease which, for its reception, requires to gain entrance to the body in some such way. Besides, ventilation of rooms is much less complete in winter than in summer. In its time and area of most frequent occurrence, therefore, diphtheria seems to be allied to certain diseases known to be communicable; and it may here be remarked that in its time and

area of greatest prevalence the evidence shows that diphtheria is not allied to diarrhœa, the disease perhaps more generally than any other attributed to filth as the cause; nor is it, in either its time or area of prevalence, allied to cholera, a communicable disease, the spread of which is more than that of most others attributed to filth. On the contrary, the commonly-accepted filth diseases prevail most in warm climates, and in the warm season in temperate climates, while with diphtheria, according to my observation, the reverse is true. But whatever the cause or the mode of spread of diphtheria, it is important that we know the time of greatest danger, in order best to guard against it. It is well to remember that it prevails most in cold weather.

PERIODICAL RISE AND DECLINE OF DIPHTHERIA IN A SERIES OF YEARS.

Although diphtheria has been known by medical writers for centuries, its prevalence in this country and in England has not been general until within comparatively recent times. According to the report of the Board of Health for New York City, for 1873, diphtheria first appeared in that city in this century, in 1852; but in 1857 only two deaths were reported from it; in 1858 five deaths, in 1859 fifty-three deaths, increasing rapidly in succeeding years to a maximum of nearly a thousand (981) deaths in a single year, 1863, when it declined and rose toward another maximum, reaching 1,151 deaths in 1873. The regular rise and decline of the disease, which is apparent wherever it is studied, for a series of years, is strong evidence in favor of the view that diphtheria is simply a communicable disease, and not generally, if ever, connected with filth as a cause. This line of evidence seems to me of such importance, that I submit herewith a table exhibiting statements for a few cities, States and countries, showing the number of deaths in each for a series of years, beginning with the first notice of the disease in each place. From the table it may be seen that, in each instance, there are more or less regular periods of increase and of decrease of the deaths from this disease. It may also be seen that the periods of greatest prevalence are not always the same in all the places, though in some years, as in 1863, there was an increased prevalence in all the places included in the table. Contiguous counties and contiguous States sometimes reach a maximum in the same year, as, for instance, Massachusetts and Rhode Island, in 1877, while Michigan had not as many deaths from diphtheria in 1877 as in 1878. Such facts are explicable, if we consider that diphtheria is known to be a communicable disease; but I see no ready explanation if we ignore this, and seek to account for the disease as caused by filth.

In order to present this fact of the regular rise and decline of diphtheria in a way to be easily apprehended, I have prepared, and I submit a diagram (it is in the hands of members) illustrating graphically the course of the disease, so far as it is shown by the deaths reported therefrom, in the State of Vermont, the data having been obtained from the vital statistics of Vermont, and covering a period of eighteen years, beginning in 1858. From this diagram it may be seen that the deaths reported from diphtheria steadily increased in every year from 1858 to 1863, in which year 1,225 deaths were reported from that dis-

ease, a greater number of deaths than from any other cause, even greatly exceeding the deaths from consumption, nearly 23 per cent. (22.96 per cent. of all deaths in Vermont in that year were from diphtheria). From the year 1863 the deaths reported from this disease declined at about the same rate as they had previously advanced, until in 1868 it had reached nearly as small numbers as in 1858. It will be seen that the deaths steadily increased for five years, and as steadily decreased during the next five years. This is just what might be expected of a communicable disease not reproduced outside the body; but I know of no explanation of these facts respecting the disease in Vermont on the hypothesis that diphtheria is a filth disease. From the table it may be seen that in England the reported deaths from diphtheria reached a maximum number of over 10,000 in 1859; that they reached another maximum in 1863, 6,507 deaths having been reported for that year; another in 1868, 3,013 deaths; another in 1874, 3,560 deaths reported; it thus appears that the first great rise, after the first noticeable appearance of the disease, reached a much higher point than did any subsequent rise, and this would be likely to be the case with a communicable disease, especially with one which was in some degree protective against subsequent attacks; it also appears that the time between the periods of maximum prevalence, or at least of reported mortality, was gradually lengthened, the first maximum occurring four years after the disease first attracted attention, the second one four years later, the third five years later, and the fourth six years later than the preceding one.

The periodic rise and decline of mortality from a given disease when studied for a series of years, has heretofore been pointed out as a characteristic of the communicable diseases. If there is any way of employing the hypothesis of the filth-causation of diphtheria so as to account for the periodic increase and decrease of that disease in the manner in which it appears to increase and decrease, it has not come to my knowledge.

HOW DIPHTHERIA MAY BE SPREAD IN SCHOOLS.

It is not alone by the breathing of infected air that diphtheria may be communicated from child to child at school. Indeed, those who deny that the air is often or ever a medium of communication of the disease, and who are at all familiar with the thoughtless ways of little children in school, must yet recognize that the possible means of communication by almost direct contact are many. Who has not seen a schoolboy with his mouth full of marbles just taken from a mate? children often borrow and lend pencils, which by instinct they wet in the mouth or hold in the mouth; they borrow sponges of one another to wipe their slates, which they moisten with saliva. In so democratic a community as a primary school-room it is a common thing for all the children of the room to drink from the same cup; their clothes commonly hang in close contact in closets and ante-rooms. They manifest their likes and dislikes by biting or refusing to bite from the same apple; and little girls often pledge eternal friendship by that classic symbol, "sharing gum." Though these things may occur outside the school, they are the more frequent the more children are brought together, as they are in schools.

DIPHTHERIA IN LYNN, MASS., IN 1876.

My attention having been attracted to a diagram in the eighth report of the Massachusetts State Board of Health, relative to diphtheria in Lynn, in 1876, I was led to study the *cause* of the rise and fall of the line indicating the increase and decrease in the number of cases. The meteorological conditions, which were carefully given, did not seem materially to have affected the course of the disease, and I was led to write to Dr. J. G. Pinkham, author of the article and diagram, inquiring at what time the *schools* opened in the fall. He replied that "the schools opened September 4, after six weeks' vacation." This seemed to me to explain the fall and subsequent rise of the line, as it was coincident with the closing and opening of the schools. Afterwards I wrote and inquired if there was a vacation in February or March. He replied that there was a vacation, "beginning February 29 and ending March 6." I have prepared a diagram illustrating what seems to me to be the relations of the schools to diphtheria, as it occurred in Lynn in 1876.

Starting at the month of January we find the number of cases to have been twelve. This was "almost the beginning of the epidemic." If we say the beginning of the outbreak was in December, 1875, the line would begin in that month, and I understood the winter term of school began December 6, 1875. In February there were thirty-two cases, in March there were but twenty-five, showing a decrease, owing, *I* think, to the vacation in the first week in March. The line rises in April to 30 cases, and in May to thirty-eight, and in June to fifty-two. There was a vacation from May 25 to June 4, but it does not seem to have had much effect in lessening the number of cases, though the number of cases might otherwise have been greater. It is possible there were other ways in which the children came together—in parties or meetings.

In July there were 54 cases, in August but 29. This I account for by the long vacation from July 21 to September 4. When the schools opened (September 4) the line rises to 54 cases in September, and then rapidly rises to 142 cases in October, when it drops off suddenly to 90 cases in November and to 64 in December. This drop in the number of cases may be accounted for as follows: During the month of August, during a vacation, the school committee passed the following order: "Ordered that no pupil shall be allowed to attend school from any house in which small-pox, varioloid, scarlet fever or diphtheria prevails; and no pupil having been affected with either of these diseases shall be permitted to return until convalescence is complete and attested by a regular practicing physician." It is reported that this order, for some reason, perhaps from being issued during vacation, when children could not readily carry the news home, was not obeyed in every instance, perhaps not generally, and on November 28 the school committee issued a circular to the physicians, asking them to help enforce the order, by urging parents to keep their children away from school while diphtheria or any contagious disease was in the family. The increased effort for the enforcement of the order probably contributed much toward the decrease in exposure and consequent decrease in cases, by keeping away from school children liable to spread the disease. Another reason for the less num-

ber in November than in October may be that the attention of the parents was strongly called to the subject by the alarming number of cases reported in October, after which many may have kept their children away from school, even when diphtheria was not present in their families, and thus lessened the number exposed to contagion at school.

The further decrease in December is but a continuation of the result of the action in October. It should be noticed, however, that the disease had become general, a large number of the children of the city had then had the disease, and consequently there was a much less number among whom it could spread.* In other words, some part of the final decline of the disease must be attributed to a comparative exhaustion of the number of susceptible children.

Some of my reasons for believing that diphtheria was spread in Lynn in 1876 by the contact and association of children in schools may be summarized as follows:

1. The disease is known to be communicable from person to person; the cause which I assign is therefore a "true cause," capable of producing the effects observed in this instance, if it was present and acting. 2. We have reason to believe that this supposed "cause" was "present and acting," there being no rule or order to forbid the attendance at school of those from families where the disease prevailed, or of those affected with the disease until during the vacation in August. 3. A thorough search through all the ordinary meteorological conditions, influences connected with season of the year, the conditions of nativity, locality, sanitary surroundings, occupations, etc., failed to reveal any other assignable cause for the course which the disease took. It thus appears that the cause assigned is a "true cause," that it was "present and acting," and that "no other known cause was present and acting." When it is remembered that the spread of the disease began with the schools in December, 1875, slackened when the schools had a vacation in March, increased with the opening of schools in April, May, June and July, slackened when the schools had a vacation in July, August and September, increased with the opening of schools in September and October, and only slackened after the citizens had occasion to be generally alarmed, after the Board of Education had invoked the help of physicians to aid in enforcing an order to stop the spreading of the disease by the schools, and after a large proportion of the children had already had the disease—when in addition it is noticed, as is shown in the diagram which I have had prepared, that in two of the three instances the decline of the disease bears what may be believed to be a quantitative relation to the length of the vacation, I think it must be admitted by every candid and thoughtful person that the evidence is about as convincing as we usually have to base conclusions upon.

HOW CAN THE SCHOOLS GO ON WITHOUT DISSEMINATING DISEASE?

In relation to public sanitation business interests are great, but educational interests are probably greater, at least to a rising genera-

* "In the city the ratio of ascertained cases is one to every sixty-five inhabitants; of ascertained and estimated cases one to every fifty-four."—*Dr. Pinkham's Report.*

tion, which is soon to displace us. Under present imperfect methods there seems to be no escape from one of two evils—either the schools continue and spread scarlet fever, diphtheria and other communicable diseases throughout cities and throughout States, or the schools are closed, and though the public health, which is of the greatest consequence, is furthered thereby, the whole educational work is for the time broken up.

For the best interests of the schools and for public health we need an entirely different kind of work from what we now have, a much more thorough, systematic, continuous and rational effort.

Let us consider what needs to be done in order that the schools may go on continuously and yet not spread disease.

The two most important general principles of action should be: Isolation of the sick, and complete disinfection of all infected material. In order that this shall be possible in relation to the schools of a city, it is essential to have such a thorough organization of the health authority of the city as that suspected cases of communicable diseases shall be promptly reported to the local Board of Health, and be immediately visited, and the truth learned, whether or not the case is one involving danger to the community. The health authority must be given money sufficient to have such work done with nearly as much promptness as the fire department displays in visiting the locality of a reported fire; and as the firemen remain until the fire is out, so the health department might have its officer or employee remain until the disease is over; he should watch and guard the public safety. He ought to use disinfectants skillfully, and, if need be, as freely as water, until all danger of a fresh outbreak should be prevented. He should see to it that in no way does the disease spread. Now, if we do anything, we quarantine all, sick and well, by closing the schools. An active health department should at all times have as perfect knowledge of the location of cases of diseases which endanger the people under its protection as the fire department has of the buildings which are burning, and thus endangering the property under its protection. With such knowledge as this the health department could furnish the teacher of every school in the city with a list of all families in which there was a person sick with a communicable disease, and, if necessary, an agent of the health department, or some other qualified person, could act as sentry at each school, and keep out persons liable to communicate disease. As an additional precaution, even where there has been no known infection, all articles likely to convey disease into the school could be easily disinfected, if it were only a custom to do so and provision were made for such disinfection. It would be easy to have a small room at every school-house where the outer wearing apparel, etc., could be disinfected and aired while the wearer was in school, instead of having, as is now so commonly the case, the clothing of all closely packed in an unventilated closet.

A SANITARY INSPECTOR OF SCHOOLS.

A sanitary inspector of schools is needed in order to secure the best results. He should be one of the executive officers of the Board of Health, and should act with reference to general cleanliness and

especially with reference to the spread of communicable diseases. In some places it is customary to permit attendance at schools from families where communicable diseases exist, and of convalescents from such diseases, on the certificate of the family physician that it is proper and safe. Sometimes the time which has elapsed since the sickness is made to determine the return to school. I think this should not be permitted, but that the Board of Health, the health officer, or a sanitary inspector of schools should control this whole subject, and that no convalescent from diphtheria, scarlet fever, etc., should be allowed to return to school except after all his clothing has been thoroughly disinfected; and this without regard to the time which has elapsed since recovery if the time is less than a year.

One great obstacle to progress in dealing with preventable disease in the schools, and out of the schools, is the inertia of established usages of the people, and of local Boards of Health. In many places it has long been the custom for the successful political party to appoint a Board of Health, and to deny it money and other means for active work; doctors and others have accepted the situation and gone through a certain routine, which often has begun and ended with the abatement of a few nuisances, the making of a report of such feeble efforts, and then giving place to another Board composed of new men from the same or from the opposite political party, which repeats the same old story. For any effective work for the prevention of diphtheria in the schools, indeed for any effective public health work, it seems essential to have a new system of selecting local Boards of Health, and a new system of supplying them with the necessary money to carry on their work. Permit me to suggest a plan for the accomplishment of both these purposes as follows:

Let us suppose that the very able address recently given in this city by Mr. Edward Fenner, Vice-President of the New Orleans Auxiliary Sanitary Association had been delivered before a "citizens' meeting" provided for by law, and officially called to consider the subject of municipal sanitation for the ensuing year, and to determine the amount to be raised by taxes for specified public health service. Let us assume that in connection with the address there had been presented carefully-prepared estimates of expenditures for each item needed during the ensuing year, and that the question before the meeting had been the fixing of those amounts. The character of the attendance at the meeting might not then have been been very different from what it was, though the audience would probably be larger, and contain a somewhat larger proportion of persons opposed to voting large sums of money; but there would then be opportunity to meet that opposition face to face, and worthy objects would be likely to succeed. Let us suppose further, that the local Board of Health, to which was entrusted the expenditure of the money and the guardianship of the lives and health of the people of the city was of a kind essentially different from local Boards of Health heretofore established, that it was not an ephemeral political body, but a permanent Board made a body corporate, and selected and constituted somewhat as follows:

The Board to consist of a convenient number of persons (perhaps one or two from each ward), whose terms of office shall be such that not more than half shall go out of office at any one time; nomi-

nation to the office of member to be made by ballot at a citizens' caucus of persons belonging to the different political parties and religiously pledged to the nomination of persons of both political parties, in such a way that the Board shall be equally divided politically, thus insuring freedom of the Board, as a whole, from political control; the Board to choose its executive officers, whose services should receive sufficient compensation to enable them to do constant and effective work. Such a Board of Health to prepare the estimates before mentioned, to receive from or order out of the city treasury the funds voted by the citizens and collected by taxation equally from all classes of people in the city (because all classes are benefited by the maintenance of public health), the Board to be responsible directly to the people for its work, and unable to charge any lack of performance of duty upon any other body of men who might fail to give a Board of Health funds to do its work.

If any one supposes that this plan is fanciful and cannot be put in practice, I can assure him that it can be done and has been done for many years (about twenty-seven or twenty-nine years) with reference to a city board of education in Lansing, Mich., and certainly no one will claim that the subject of primary school education is of greater consequence than that of an efficient Board of Health to guard the lives of those for whom the education is provided.

THE RELATIONS OF CERTAIN FILTH DISEASES TO COLD WEATHER.

PNEUMONIA, DIPHTHERIA, CROUP AND MEASLES.*

By A. N. Bell, A.M., M.D.

Filth diseases are those which are now everywhere regarded, at the outset, at least, as the result of removable causes, and therefore include all such diseases as are caused by emanations from a foul soil, from swampy and water-logged land, soakage from surface filth and sewage, or the effluvia caused by overcrowding and deficient ventilation in tenement-houses, school-houses, churches and other crowded places, promotive of malaria in its most comprehensive sense. It is in this connection that pneumonia has attracted the attention of the writer, as a filth disease, for many years.

Thirty-eight years ago he found himself in a conflict with many cases of pneumonia at about this time of the year, on the heels of an unusually severe epidemic of malarial fever in Northampton County, Virginia—a region at that time notorious for the prevalence of autumnal remittent and intermittent fevers. In that, his first en-

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counter with pneumonia, he learned to look upon it more in the light of some of the oldest authorities than his then recent instruction. In short, from that time continuously, he has regarded pneumonia more as a systemic than as a local disease; inflammation of the lungs bearing the same relation to it as inflammation of the throat to diphtheria and croup, or bronchitis to measles.

But it is less the purpose of this note to discuss the lesions than the causes and conditions of pneumonia to other diseases of acknowledged filth origin. Evidence that persons living over damp, cold, swampy regions, or over soil fouled by domestic fifth, are peculiarly liable to pneumonia is as old as Hippocrates, and all the way down to the present in medical literature, no age or country is lacking in evidence of liability to pneumonia, under the conditions first taught by the father of medicine.

But in the early history of this disease by American writers on the subject, where recognized under the conditions referred to, it is commonly treated of under different qualifying names, such as "typhoid" or "typhus" pneumonia, "bilious" pneumonia, "cold plague," "congestion of the lungs," etc., all meaning the same disease; but all agreeing in the fact that it has frequently prevailed in the cold, swampy regions of South Carolina, and more northerly regions of similar character in this country epidemically.*

On the other hand, some of our most recent and best living observers of vital statistics—for example Drs. J. J. Quinn and H. B. Baker—from a brief period of observation having found "that in months when more than the average number of deaths from pneumonia occurred, the air was colder and dryer than the average, and that in months when less than the average number of deaths from pneumonia occurred, the air was warmer and more moist than the average,"† conclude that a cold, dry atmosphere is the especial cause of the disease, and that exposure to it is the chief thing to be guarded against for its prevention. Notwithstanding, these observations of Doctors Quinn and Baker are by no means irreconcilable with the correlation of pneumonia and the zymotic diseases, which it is the purpose of this note to show; on the contrary, taken in connection with other carefully collated facts in Dr. Baker's statistics, they strengthen our conclusions. These observers fall short only by concluding their inquiry after having satisfied themselves of a common secondary cause of the disease without further pursuit.

It is particularly noteworthy in one of Dr. Baker's tabulated statements of deaths from all causes throughout the State of Michigan that pneumonia and typhoid fever are coincidently prevalent, being respectively the most prevalent in the same counties although at different seasons, the respective numbers of deaths from these two diseases for the year 1874 being: from pneumonia, 800; typhoid fever, 610.‡

Another important illustration of the correlation of pneumonia with zymotic diseases is shown by the same statistician in regard to infant

* Dickson, John Bard, Gibbes, and others, quoted in Watson's Practice of Physic, Condie, 1845, pp. 611–617.

† Seventh Registration Report of Michigan Vital Statistics, 1873, p. 278.

‡ Registration Report, 1874, pp. 308–9.

mortality, the very class of all others, certainly, which is most exposed to the dangers of *indoor* emanations, rather than to the cold, dry atmosphere by which indoor emanations are promoted.

Dr. Baker remarks: "The subject of infant mortality is important for many reasons, one being that it is believed to furnish a guide to a knowledge of healthfulness of localities, and, at different times, because unhealthful conditions more quickly prove fatal to children than to adults. Excessive mortality of children, therefore, is an indication of sanitary work, not only for the prevention of infant mortality, but of the evil effects of unsanitary conditions on the infants and adults who survive, but are so injured as to lead imperfect lives thereafter." The full significance of these remarks may be best appreciated when taken in conjunction with the important showing that one of the most prolific causes of infant mortality in Michigan is pneumonia; and that "more than one-third of all the decedents from this disease in 1874 were under five years of age, the per cent. being 34.50." But of that particular year, Dr. Baker further remarks that the temperature was very low in April, and there was corresponding increase of mortality from this disease. But the deaths from it were also unusually numerous in March, when the temperature was even a little higher than usual. The highest rate of mortality from pneumonia obtained by Dr. Baker, taking one year with another, was in February, March and April. Making the comparisons of deaths and conditions of 1874 with those of preceding years, it would seem, however, that the evidence of causation of deaths by pneumonia is stronger in relation to humidity than to temperature, and rather stronger relative to ozone than to humidity; but it would appear that the unusually high pressure of the atmosphere during the first part of the year 1874 may have had even a closer relation to the deaths from pneumonia than had any of the other meteorological conditions.

The highest rate of mortality from pneumonia observed by Dr. Baker, one year with another, was found to occur during the months of February, March and April.

The whole of Dr. Baker's reasoning on the cause of the disease, however, is based upon the assumption that it consists in exposure to a cold, dry atmosphere, with the presence of a more than average amount of ozone. This conclusion we believe to be fallacious only in so far as these conditions of the atmosphere act indirectly by promoting exhalations from foul cellars, house-drains and other domestic impurities.

Taking another careful collection of statistics, but of a dense population (Dr. Baker's being of the State of Michigan at large), in the report of the Board of Health of New York, 1874–5, there is a summary of pneumonia for four years—March 1st, 1871, to March 1st, 1875—during which period the number of deaths from pneumonia was 7,873, and in this population, as in that scattered over the State of Michigan, a very large proportion, 3,623, or nearly one-half the whole number, was of the class most exposed to in-door dangers, children under five years of age. By this report it also appears that the greatest prevalence of the disease occurs in the spring and winter months, increasing usually from November to April.

Dr. Francis Delafield, who collated these statistics, remarks, in con-

nection with them, that "so far as these four years go, they seem to show that in persons over five years old the combination of a low temperature, with great daily range of temperature, is accompanied with a large number of deaths from pneumonia.

"In children under five years old the curves of mortality do not seem to correspond very closely, either with the lowest temperature or the daily ranges of temperature. The mean height of the barometer for each month of the four years is given, but there seems to be no close relation between the height of the barometer and the mortality. The greatest mortalities seem to correspond to rather a low barometer. The mean humidity for each month of the four years is also given; and in the spring and winter months there is some correspondence between the degrees of humidity and the mortality—the greater the humidity the greater the mortality. This is especially the case if a low temperature exists at the same time as a high degree of humidity."

From a summary for seven years, 1870 to 1876 inclusive, in the Philadelphia Board of Health Report, 1876, the infantile mortality from pneumonia to other diseases bears about the same relation as in the State of Michigan and the city of New York, the number classed under the head of congestion and inflammation of the lungs being 3,556, croup and diphtheria 3,156, and correspondingly most prevalent during the colder months of the year.

Finally, it must be borne in mind that in the classifications now considered, in Michigan and New York, pneumonia only is considered, to the exclusion of a large number of other closely allied acute lung diseases, and in Philadelphia, congestion of the lungs only is added, but still also excluding the deaths from other acute lung diseases due to the same cause. Taking the weekly statistics of the National Board of Health bulletin, for the twelve months ending with September 4, 1880, with the view of showing, as far as practicable, any difference in results of cities situated different from one another in relation to climate, an analysis of the reports of nine cities read as follows:

Abstract from Nat. Board of Health Bulletin, from Oct. 4, 1879, to September 4, 1880.	Diphtheria and Croup.		Measles.		Acute Lung Diseases.	
	November to April.	May to October.	November to April.	May to October.	November to April.	May to October.
Boston.....	321	215	2	16	644	255
Brooklyn....	569	382	97	54	995	541
New York....	720	580	420	147	2626	1435
Philadelphia.	336	250	88	15	1339	1177
Baltimore....	245	178	2	13	283	113
Chicago.....	677	471	107	32	505	326
St. Louis....	143	49	35	15	351	128
Charleston ..	22	14	.....	.....	93	33
New Orleans.	50	43	21	47	220	91
	3083	2182	772	439	7056	4099

From the evidence here presented, in addition to a somewhat extended observation of pneumonia in its different relations under widely different circumstances, I draw the following conclusions:

First—Pneumonia is a systemic disease, with a chief local manifestation in the lungs.

Second—Pneumonia and its congeners, acute lung diseases, have filth for their chief factor and primary cause, and they should therefore be classed under the head of zymotic diseases.

Third—The influence of a cold dry air is secondary in promoting acute diseases of the lungs, of which pneumonia is the chief, in so far as these conditions of the atmosphere promote emanations by percolation into the warmer and more rarified atmosphere of the domicile; and are mischievous in proportion to the extent of underlying and surrounding impurities, and the porosity of basement and cellar walls and floors. The remedy is apparent.

Garden City, N. Y., December 3, 1880.

Mortality Statistics.—Populations according to most recent estimates, the total number of deaths, the number under 5 years of age, the death-rate per 1,000 of population, and the prevailing causes of death for the week ending December 18, 1880, were—in Atlanta, Ga., 38,000; 18; 5; 24.3; consumption, 5; acute lung diseases, 4. Augusta, Ga., 27,012; 8; 3; 15.3; consumption, 2. Baltimore, Md., 332,190; 190; 84; 23.7; consumption, 23; acute lung diseases, 22; diphtheria, 14; scarlet fever, 14; croup, 10; accidents, 7. Boston, Mass., 375,000; 182; 64; 25.3; consumption, 39; acute lung diseases, 23; diphtheria, 16; croup, 13; puerperal diseases, 7. Brooklyn, N. Y., 566,689; 283; 116; 26.1; diphtheria, 49; acute lung diseases, 46; consumption, 43; croup, 10. Buffalo, N. Y., 155,000; 153; 14; 17.7; diphtheria, 8; consumption, 6; acute lung diseases, 5. Cambridge, Mass., 52,800; 22; 6; 20.0; acute lung diseases, 3; consumption, 2; diphtheria, 2. Camden, N. J., 41,714; 16; 5; 20.0; consumption, 3. Charleston, S. C., 57,000; 31; 15; 28.3; acute lung diseases, 8; consumption, 6. Chicago, Ill., 503,298; 189; 82; 19.6; diphtheria, 30; acute lung diseases, 21; consumption, 12; scarlet fever, 6. Cincinnati, O., 280,000; 123; 32; 22.9; consumption, 23; acute lung diseases, 23; accidents, 10. Cleveland, O., 175,000; 46; ?; 13.9; acute lung diseases, 6; diphtheria, 5; accidents, 5; consumption, 4. Dayton, O., 39,000; 13; 2; 17.4; consumption, 6; acute lung diseases, 2. District of Columbia, 180,000; 82; 26; 23.7; acute lung diseases, 10; consumption, 8; croup, 5; diphtheria, 3. Dubuque, Iowa, 23,000; 9; 3; 16.6. Erie, Pa., 28,346; 9; 1; 16.7; consumption, 4. Evansville, Ind., 30,000; 10; 2; 17.4; consumption, 2; acute lung diseases, 2. Fall River, Mass., 49,000; 23; 13; 24.5; acute lung diseases, 4; consumption, 2. Holyoke, Mass., 22,000; 5; 3; 11.9; acute lung diseases, 2. Hudson County, N. J., 209,000; 73; 33; 18.2; acute lung diseases, 10; croup, 10; consumption, 7. Indianapolis, Ind., 75,350; 15; 4; 10.2; consumption, 2; acute lung diseases, 2; diphtheria, 2. Lawrence, Mass., 39,000; 16; 3; 21.4; con-

sumption, 3; acute lung diseases, 2. Little Rock, Ark., 22,000; 10; 5; 23.7; acute lung diseases, 2. Louisville, Ky., 175,000; 49; 17; 14 4; consumption, 9; acute lung diseases, 6. Lynn, Mass., 38,284; 10; 5; 13.6; consumption, 2; diphtheria, 2. Memphis, Tenn., 34,000; 23; 5; 34.7; consumption, 7; acute lung diseases, 3. Milwaukee, Wis., 115,-761; 60; 35; 26.7; scarlet fever, 9; acute lung diseases, 7; diphtheria, 6, croup 4. Mobile, Ala., 40,000; 26; 6; 33.0; consumption, 7; acute lung diseases, 2. Nashville, Tenn., 43,543; 15; 7; 17.7; consumption, 6. Newark, N. J., 138,000; 47; 24; 18.0; consumption, 8; croup, 5; acute lung diseases, 3. New Bedford, Mass., 27,286; 9; 4; 17.2. New Haven, 62,882; 26; 7; 21.2; consumption, 3; acute lung diseases, 3; diphtheria, 2. New Orleans, La., 216,359; 107; 21; 25.8; consumption, 18; acute lung diseases, 6; diphtheria, 5. New York, N. Y., 1,206,507; 651; 244; 27.6; consumption, 114; acute lung diseases, 105; croup, 38; diphtheria, 34; accidents, 25. Norfolk, Va., 26,200; 9; 1; 18.2. Omaha, Neb., 31,000; 12; 2; 20.7. Peoria, Ill., 34,850; 8; 6; 12.0. Philadelphia, Pa., 846,980; 391; 90; 24.1; consumption, 63; acute lung diseases, 47; small-pox, 40; enteric fever, 17; croup, 7; scarlet fever, 7; diphtheria, 7. Pittsburg, Pa., 156,649; 76; 38; 24.9; acute lung diseases, 13; diphtheria, 10; scarlet fever, 9; consumption, 6. Portland, Me., 34,000; 9; 2. Poughkeepsie, N. Y., 20,200; 5; 2. Providence, R. I., 104,862; 43; 10; 21.4; consumption, 10; acute lung diseases, 5. Richmond, Va., 65,000; 32; 13; 26.0; consumption, 5. Rochester, N. Y., 90,000; 32; 14; 18.6; consumption, 5; diphtheria, 4; acute lung diseases, 3. Sacramento, Cal., 21,500; 8; 2; 19.4. Saint Louis, Mo., 351,000; 108; 47; 16.1; acute lung diseases, 33; consumption, 11. Salt Lake City, Utah, 25,000; 8; 3; 16.7. San Antonio, Tex., 20,597; 10; 1; 25.3; consumption, 3. San Francisco, Cal., 233,700; 110; 30; 24.06; consumption, 27; acute lung diseases, 12. Somerville, Mass., 25,000; 8; 4; 16.7. Springfield, Mass., 33,000; 13; 4; 20.6; consumption, 3. Utica, N. Y., 34,500; 9; 1; 13.8. Waterbury, Ct., 20,-300; 8; 2; 20.6. Wilmington, Del., 44,000; 10; 5; 12.3. Worcester, Mass., 58,295; 24; 9; 21.5; consumption, 3; acute lung diseases, 2.

Foreign, at most recent dates: Alexandria, Egypt, 220,000; Dec. 4, 190; 45.0. Amsterdam, Holland, 316,952; Dec. 4, 142; 25.4. Barmen, Ger., 95,000; Dec. 4, 36; 19.7. Belfast, Ireland, 230,000; Dec. 11, 83; 23.7; typhoid fever, 5. Berlin, Ger., 1,096,644; 477; 22.6; typhoid fever, 25; other contagious diseases, 62. Bremen, Ger., 109,-000; 27; 12.9. Bradford, Eng., 197,196; Dec. 4, 75; 19.8. Bristol and Clifton, Eng., 213,500; Dec. 4, 94; 23.0. Bucharest, Roumania, 177,-646; Dec. 4, 116; 36.0; contagious diseases, 12. Buda-Pesth, 344,-604; Nov. 27, 227; 34.3; contagious diseases, 10. Cadiz, Spain, 65,-028; Dec. 4, 54; 44.3. Calcutta, India, 429,535; Nov. 13, 336; 40.8; cholera, 39; typhoid fever, 10. Cardiff, Wales, 82,364; Dec. 11, 30; 18.9. Chemnitz, Saxony, 101,115; Nov. 27, 59; 30.6. Copenhagen, Denmark, 235,254; Nov. 30, 68; 15.1. Dublin, Ireland, 314,666; Dec. 11, 164; 27.1; typhus 5; other contagious diseases, 12. Genoa, Italy, 185,000; Dec. 11, 73; 20.7. Hamburg, Ger., 400,000; Nov. 20, 187; 24.4. Havana, Cuba, 195,437; Dec. 11, 134; 35.8; small-pox, 13; yellow fever, 5. Havre, France, 92,068; Dec. 4, 55; 31.1. Leeds, Eng., 318,929; Nov. 27, 113; 18.5. Leipsig, Saxony, 150,836; Dec. 4, 65; 22.4. Leith, Scotland, 58,479; Dec. 11, 32; 28.4; contagious diseases,

10. Liverpool, Eng., 544,056; Dec. 11, 253; 24.3; contagious diseases, 34. London, Eng., 3,664,149; Dec. 4, 1,446; 20.6; typhoid fever, 14; small-pox, 10; other contagious diseases, 149. New Castle, Eng., 149,366; Dec. 4, 61; 21.2. Nuremberg, Bavaria, 106,000; 40; 20.9; contagious diseases, 7. Paris, France, 1,988,806; Dec. 9, 1,051; 27.5; typhoid fever, 39; small-pox, 24; other contagious diseases, 88. Rome, Italy, 304,192; Nov. 6, 176; 30.1; small-pox, 42; other contagious diseases, 11. Rouen, France, 104,000; Dec. 11, 59; 29.3. Sheffield, Eng., Dec. 11, 93; 15.9. Stockholm, Sweden, 169,429; Nov. 27, 96; 29.6; typhoid fever, 6; contagious diseases, 16. Trieste, Austria, 128,233; Nov. 20, 80; 32.5. Vienna, Austria, 746,243; Dec. 4, 332; 20.1; small-pox, 11; other contagious diseases, 20; typhoid fever, 5.

MENU.

Gourmandism in excelsis.—The Hungarian press reports a remarkable feat of eating and drinking against time said to have been performed by a youthful Magyar residing in Grosswardein. This surprising trencherman laid a wager, and is declared to have won it with several minutes and an omelette to spare, that he would, between the hours of 9.30 P. M. and midnight, devour the following comestibles, it being clearly understood that there should be a full portion of each dish in succession, any two of which portions may be estimated as constituting a hearty meal for a full-grown adult blessed by nature with a lively appetite. Roast beef with paprika sauce and potatoes; a Viennese veal cutlet with peas; a fillet of beef with dumplings; grilled pork and pumpkins; half a fowl, fried in batter; bubble and squeak; a beef steak with poached eggs; fried calves' liver; calves' brains and kidneys; pickled veal; stewed beef; a broiled goose liver and a fricasseed foul with carrots. He not only contrived to stow away all the articles enumerated in this comprehensive ménu, washing them down with two quarts of beer, four bottles of old wine, and three of aërated water; but when he had cleared the last of his appointed dishes—the clock dial then marking ten minutes to twelve—he asked for a three-egg omelette, which vanished down his throat before the hour struck.—*The Caterer.*

All Fish should be fried in the purest oil; this can be used over and over again by clarification, and, all things considered, oil is quite as economical as lard or dripping. Clean your pan with silver paper, put therein sufficient oil to thoroughly and deeply immerse the fish. Permit this to boil, and it will attain so high a temperature that when a finger of bread is dipped into it and instantly drawn out, the bread has acquired a brown surface, or a piece of white paper dipped into it comes out dry, then—and not until then—your fish, already egg and bread crumbed, is launched lightly on to the surface of the oil, the boiling power of which will keep it afloat, and then, according to the thickness of the fish, from two to three minutes should be given to it; when turn it gently with similar flat tongs.—*The Caterer.*

Economical Cake.—Take one cup sugar, two and a half cups Hecker's self-raising flour, tablespoonful butter, one egg, one cup sweet milk or cold water. Bake immediately.

Editor's Table.

National Quarantine.—Previous to the recent meeting of the American Public Health Association in New Orleans, the Board of Health of the State of Louisiana issued a call for a Quarantine Convention, to be held at the same place and time. Invitations were accordingly issued to the Governors of Alabama, Texas, Mississippi, Tennessee, Arkansas, Kentucky, Georgia, Florida, Missouri, Maryland, Illinois and Louisiana; to the National Board of Health, and the Mayors of all the larger cities, and to the State and local Boards of Health generally, requesting the appointment of delegates. Nearly one hundred attended. The Convention met in the afternoon of every day, after the morning session of the Public Health Association, and there were present, besides the delegates, a considerable number of the members of the Public Health Association by invitation; the delegation from the State of Louisiana being proportionally large throughout.

Together with the issue of the call the Louisiana State Board of Health submitted a series of propositions, as the special work of the convention, based upon the assumed right of the State Board of Health of Louisiana to control the quarantines of the mouth of the Mississippi River and the Louisiana gulf coast. It soon became evident, however, on convening, that a controlling majority of the delegates had not assembled for that purpose; but, on the contrary, to express their dissatisfaction with the Louisiana management, and to secure, if possible, such changes in the future as would afford better protection to the people they represented. Most of the delegates had evidently pre-determined that, however satisfactory quarantine, as hitherto practiced by the authorities of Louisiana, may have been, or would be in the future, to the people of that State alone, it had now become a matter of much broader significance; other cities and States had become equally concerned with New Orleans and the State of Louisiana, and as the representatives of those other cities and States, they had neither the disposition nor the power to commit the protection of the health of the people they represented wholly to the keeping of the health authorities of Louisiana.

Consequently nothing practical was accomplished. Resolutions appointing committees to formulate a plan of future action were adopted; and a resolution offered recommending Congress to provide by law for enlarging the duties of the National Board of Health to comprehend jurisdiction of maritime quarantine, to be conducted either in connection with local Boards or under its separate control,

as the exigencies may require; but pending action on this, the convention adjourned to meet in Savannah this year, at the same date as fixed for the meeting of the American Public Health Association.

Meanwhile the regular monthly meeting of the New Orleans Chamber of Commerce was held, and a committee which had been appointed to represent the Chamber at the Quarantine Convention submitted a report for authorization which was approved, and which was, in part, as follows:

We believe it to be the duty of this body to proclaim honestly and openly that it looks upon the interests of commerce as subsidiary to those of public health. It is, therefore, the expressed sense of this committee that such quarantine restrictions as may be approved by disinterested and thoroughly competent sanitary bodies should be faithfully acknowledged and carried into effect by this Chamber. . . .

. . . In this connection your committee begs leave to state that it does not assume to decide what these measures ought to be; but it has ample information that the system of inspection inaugurated by the National Board of Health, approved by the Academy of Science, the American Public Health Association and the Sanitary Council of the Mississippi Valley, has inspired more confidence in surrounding States than any measure heretofore devised.

Your committee is satisfied that no measures such as these can be successfully carried into effect by any local Board of Health.

. . . In view of these facts your committee unanimously agree in the belief that the National Board of Health is an advantage to New Orleans, and, in truth, a necessity for the protection of both health and commerce, until the time comes when the people of the Southern and Western States have arrived at such a state of education in sanitary science and such a degree of accord in matters of health, that some better system for mutual protection can be agreed upon.

In connection with the foregoing, it is worth while to consider briefly the situation and provisions of the Louisiana quarantines and their relation to the dangers which they are intended to forestall. And here it may be remarked as an anomaly of asserted civil rights, that while the State of Louisiana, as represented by her health authorities, denies the right of Congress to impose laws for the protection of the public health, that State alone assumes the right to subject the commerce of her sister States to a burthensome tax for her exclusive benefit! Among her most recent *legislative acts establishing and defining the powers of the Board of Health, State of Louisiana, relative to quarantine*, under date of May 24, 1880, is the following provision:

. . . Vessels free from disease, not in a foul condition and not from an infected district (which shall be decided upon by the Resident Physician); shall be furnished with a certificate of health and allowed to proceed to the city. The Resident Physician shall require for every inspection and certificate thus furnished the following fees: Every sailing vessel of one thousand tons and over shall pay thirty

dollars ($30); every ship of one thousand tons or less shall pay twenty dollars ($20); every bark shall pay fifteen dollars ($15); every brig shall pay ten dollars ($10); every schooner shall pay seven dollars and fifty cents ($7.50); every steamboat (towboats excepted) shall pay five dollars ($5); every steamship from Florida, Alabama, Mississippi or Texas, shall pay ten dollars ($10); every steamship from other ports shall pay twenty dollars ($20). The Resident Physician shall return to the Secretary of the Board of Health a weekly list of all the vessels inspected by him as well as all the fees collected by him, which shall form a fund for the support of quarantine.*

This unauthorized tax on commerce for State revenue at the Mississippi River quarantine in particular, is considerably in excess of the costs. Other stations, less in command of the State authorities, however, are less lucrative. Owners and masters of vessels knowing the illegality of the extortion, not only defy the authorities in their effort to collect it, but frequently, on account of the imposition, refuse to submit to inspection. Of over 1,000 vessels which passed the Rigoletts, and subject to quarantine at that place in 1879, including a considerable number of regular traders with Vera Cruz and other Mexican ports, and Havana, where yellow fever prevailed, about a dozen only paid fees. A large number *ran by*, in defiance of painted signs and signal guns; and the health authorities of the State dare not undertake to prosecute them, in the face of adverse judgments on previous efforts, and on the advice of counsel, lest the State itself be mulct in damages. Such illegal regulations to increase the revenues of the State, therefore, actually serve to aggravate the danger of importing disease.

In view of the above as a part only of the difficulties, and of the extent of the interests involved in the administration of quarantine, it is important to notice the advantages now at the command of the National Board of Health, with but very slight modification of the law —possible even without it—of solving the difficulty.

By the annual report of the National Board, 1880, (Supplement No. 2, National Board of Health *Bulletin*) the Board "having found a great majority of the quarantine establishments of our seaports are either improperly located or do not possess the facilities necessary for properly dealing with infected ships, many of them amounting to little more, practically, than inspecting and boarding stations, ... decided that complete quarantine establishments at Boston, New York, Philadelphia, Baltimore, *near the mouth of Chesapeake Bay*, Wilmington, Charleston, Savannah, *near Brunswick, Ga., Ship Island, and*

* This is in reality an amendment of an act on the statute book of Louisiana ever since 1855. Other States, and some ports in their corporate capacity, have attempted the same sort of exactions, but on the decisions of the courts against them, most of such acts have been repealed.

at some point on the Texas Coast," would, "for the present at all events," serve for the protection of the country against the introduction of disease by commerce. The italics are ours, for the purpose of designating the additions recommended by the National Board. Owing to the limitation of appropriation two of these only, the one near Brunswick, Ga., and the one at Ship Island, have been put in practical working order, but neither of them yet fully equipped. Enough has been done, however, to demonstrate their acceptability to the mercantile interests of the country, and to secure the confidence of a large majority of the health authorities in the cities and States most subject to danger. And above all—and of controlling interest—is this true of the establishment at Ship Island. Quarantine is no longer a forty days' detention of vessels, and pest houses for crews and passengers, but of vigilance, intelligent inspection, thorough disinfection, proper care of the sick, and *dispatch.* "We are not afraid of yellow fever so much as of being quarantined," says the New Orleans *Democrat.* So, perhaps, because the *Democrat* has got used to yellow fever. But an enlightened quarantine, such as we believe the *Democrat* will fully endorse, will speedily abridge all its fears, while it will equally abridge the fears of the hundreds of thousands of people out of New Orleans of yellow fever.

Away with all that notion of a State's right to tax its sister States, and commerce in general, while it disputes the right of Congress to prevent an infected ship from entering its ports. Make it the duty of the National Board of Health to direct any vessel having yellow fever or other quarantinable disease on board, or on board which any such disease has existed since her last departure from port, bound to any port between and including Pensacola, Fla., and the Atchafalya River, to proceed to Ship Island; and to this end the National Board of Health shall have a sufficient number of printed orders delivered to all pilots serving within said limits, for distribution to the masters of all vessels so bound; and any pilot, or other person acting as such, who fails to deliver such notice, or aids to land any person or persons from any such vessel, shall be subject to forfeiture of his license, fine and imprisonment. Let it also be made the duty of the National Board of Health to appoint an inspector of vessels, to reside at the Jetties near the mouth of the Mississippi River, whose duty it shall be to visit and inspect every vessel coming from any port whatever, or entering the mouth of the Mississippi River, and any vessel, whether having had any case of quarantinable disease on board or not, found to be in a condition dangerous to the health of the port, shall, for purification, be sent to Ship Island, detained at the mouth of the river, or permitted to proceed to the Mississippi Quarantine, at the

discretion of the said inspector, who shall, in every case of so directing any such vessel to the care of another health officer, also send his reasons therefor.

An elaboration of this plan would be equally applicable to the other National Quarantine stations and the ports in their several vicinities. But whatever may be the objections in regard to them, if there are any, the Mississippi River is national ground. The officials of the State of Louisiana have no more authority to say what shall enter or leave it than Tennessee, Ohio, or any one of a dozen other States. The Mississippi is the dangerous highway for the introduction of yellow fever, and is, in a peculiar degree, the province of the National Board of Health, demanding the exercise of its highest skill.

The Criminality of New York Tenement Houses.—The ten lives sacrificed by the burning of one of the death-traps which are the curse of New York, January 4th, will have served a good purpose for the future, if those whose duty it is to investigate the causes of crime have the courage to fix the responsibility where it belongs and secure the merited punishment. Ten persons killed, even though all at once, in such a den, is a small sacrifice compared with the continuous process of disease and death procured and abetted by tenement house owners and neglectful officials all the year round in this city. And singularly enough the account of human misery and death by such procurement and negligence is in the same keeping as the law!

It would be an easy matter to trace, through the records of the Health Department, thousands of deaths, and the passway to indescribable misery in hundreds of families in New York, brought about by the same kind of defiance of law and neglect of official duty as the case in point, excepting only in the manner of the deaths. Ten deaths from pneumonia or diphtheria in a tenement house constructed and situated as this one was would scarcely excite comment. Indeed, such a number of deaths from preventable causes is probably less than the annual average from such houses, and there are several hundred of them. And these several hundred have, every one, its match burning all the while, consuming the poor tenants and poisoning the multitude. For the terrible mortality from diarrhœa and febrile diseases at one season of the year, pneumonia, diphtheria, measles and their congeners at another, and consumption at all seasons, due for the most part to the deficient ventilation and filthy surroundings common to tenement houses, is by no means limited to them. On the contrary: In a city, where more than half of the whole population live in tenement houses, of which there are over twenty thousand, and one in twenty of them, at least, unfit for occupancy by

man or beast, it is by no means surprising that the whole population suffers—that the emanations therefrom spread throughout the community, and all are more or less liable to the fatal consequences. The tenement house law which now obtains, provides among other things that:

"At the rear of every building hereafter erected for, or converted to, the purposes of a tenement or lodging house on any lot, there shall be a clear open space of not less than ten feet between it and the rear line of the lot. But when thorough ventilation of such open spaces can be otherwise secured, such distances may be lessened or modified in special cases by a permit from the Board of Health. . . . Sleeping rooms which do not communicate directly with the external air shall have ventilating or transom windows. . . . that any tenement house or room therein is so overcrowded that there shall be afforded less than 600 cubic feet of air to each occupant of such building or room, the said Board may, if it deem the same to be wise and necessary, issue an order," &c.

Pending this act of the Legislature, two years ago, we took occasion to advocate the importance of *mandatory* power of the Board of Health instead of optional in such cases as the one now under consideration.* Access to this house was through a narrow, dark passage, only thirty inches wide and forty-five feet long, which opened into a court only three feet wide and thirty feet long. From this a single thirty-inch door opened into the house, which was of five floors and arranged to hold thirty families; and was occupied at the time of the disaster by thirty-seven persons. The first floor was without a tenant. All the floors were arranged alike. The hallway was forty inches wide, and the stairs from floor to floor twenty-nine inches wide. The principal room on each floor was twelve by fifteen feet, and two bedrooms, each one six by seven and a half feet, and one of them only, lighted by a window.—It is apparent that such a tenement was in direct violation of the law unless the Board of Health deemed its occupancy "to be wise and necessary," and gave "a permit." It should be made the duty of the Board of Health to absolutely prohibit all such tenements. Moreover, we are fully convinced, that the most effectual of all means for accomplishing a tenement house reform in New York, where the double evil of want of room and bad construction so commonly obtains, is that which we have several times urged heretofore, namely, the passage of a law requiring the Board of Health to designate a certain number of the worst, say twelve, every year, for ten years to come for

*The Sanitarian, Vol. 7, pp. 181, 227.

assessment and possession by right of public domain, to be destroyed and the ground turfed over. Such a procedure on the part of the city, would not only be a potent means of tenement house improvement, but would save the city, in the costs of pauperism, vice and crime, many times the amount of the assessment for their possession.

The Importance of Pure Soaps, we are glad to find, is beginning to attract attention abroad, as well as in this country. "Consumers of Soap," says a writer in the *Deutsche Industrie Zeitung*, "should not neglect to inform themselves of the real value of the wares they buy, and to prove the absence of intentional adulterations. A very old trick is to increase the weight of soap with water, but as ordinary soap soon loses this by evaporation in the air, this deception will not succeed unless the soap is sold off quickly. There are two other methods of increasing weight: One consists in adding chemicals which are adapted to hold the excess of water in the soap, so that it will not lose by lying; the other is by the addition of mineral substances. Adulteration by increasing the amount of water or by the addition of worthless chemicals pays well, and unprincipled manufacturers do a fine business by duping their customers. There is soap in the market which contains 75 per cent. of water, and externally cannot be distinguished from soap which contains only 12 per cent. It is easy to see how great a difference there may be in the value of two specimens of the same price. By simply increasing the amount of water, doors and gates are open for deception in soap making to such an extent, that many manufacturers make a profit of a hundred per cent. by selling water instead of soap.

Gelatinous substances are also frequently used to retain the excess of water in soap and are at the same time an excellent filling. Alumina, in the hydrated form, performs this service best. The author detected this substance in six samples of soap, which had over 60 per cent. of water, and were sold by their manufacturers at the same price as another manufacturer sold soap with 24 per cent. Other gelatinous substances, like silica and organic substances, are used. They are easily detected by chipping up the soap and dissolving it in alcohol, in which they are insoluble, while pure soap is perfectly soluble. The undissolved residue may be filtered out and more carefully examined. Hot water will dissolve the gelatinous substances if they are organic, like gelatine or glue, leaving alumina, silica, etc., unaffected. By evaporating the solution and weighing the residue, the quantity of gelatine can be quantitatively determined. The silica and alumina can be dried, then ignited in a platinum or porcelain crucible and weighed.

Water glass is frequently added to soap, and although it is not an injurious ingredient, such soap can be made cheaper, and should be sold as water glass soap.

In some samples, the author found starch, gypsum, chalk, clay, phosphate of lime (bone ash), and barytes, or blanc fix, as the adulterants. All these can be separated by dissolving the dry soap in alcohol. The alcoholic solution may be evaporated to dryness, dried at 212° Fah., and weighed.

The author found more adulteration in the Berlin soaps than any other; but in the little city of Munster, out of twelve samples from different factories, five were adulterated.

The author omits to mention among other impurities the use of fats in a state of putrefaction, probably as common in Germany as in this country, perfumes being added to disguise the odor; and that such soaps are frequently poisonous. The only way to avoid such impositions and dangers is to buy such brands as are known to be made of pure fats only, and free of all impurities, such as the "German Laundry Soap," manufactured by Mr. Chas. S. Higgins, of New York.

British Continental Society on the Contagious Disease Acts.—(Translated by T. P. Corbally, A.M., M.D.) British Continental and General Association. Commission to the Congress of Genoa.

Genoa, October 7th, 1880.

To the Editor of The Sanitarian, New York: I have the honor to send you the following *resolution*, proposed by Dr. A. Bertani and adopted unanimously by the second Congress of the British Continental Society, at the meeting held on Wednesday, September 29th, in the session devoted exclusively to the consideration of questions of hygiene.

Aurelio Saffi, President of the Congress.

Resolution of Dr. Bertani.—The Congress in the session for considering the subject of hygiene, believing that the sanitary regulations, and the consequent medical examinations, are inefficient, as a means of preserving the public from venereal infection, or even for limiting its spread, desire to hasten, by giving expression to its opinion and by its suffrage, the moment in which all governmental measures regarding prostitution will be abolished, because, while they do not accomplish the end for which they were enacted, they are grievously unjust by putting unnatural restraint upon the female.

Literature.

California State Board of Health Report for the year ending June 30th, 1880, shows an improved state of the public health —a smaller death-list throughout the State, except from pneumonia—than for the preceding year. The ratio appears larger, however, in consequence of a common error with health authorities—an overestimate of population, and especially so in the larger cities, of which San Francisco is an example. On the local enumeration this city was estimated in April last at 305,000; the recent United States census makes 233,000. For the three cities—San Francisco, Sacramento and Los Angeles—the difference in population is nearly one-fourth. With the exception of pneumonia, prevalent during the winter, no epidemic disease of a serious character has prevailed. Of the total mortality, 5,809, in nineteen communities, with populations ranging from 600 to 233,000, consumption and other tubercular diseases killed 951; pneumonia and other acute lung diseases, 816. Diarrhœal diseases, 156; typhoid fever, 141; diphtheria and croup, 140; all other zymotic diseases, 215. The ratios of mortality per 1,000 of population range from 4 (in Williams and vicinity, 3,500) to 50 (in Cloverdale, 600). In the larger cities the ratios were: San Francisco (233,000), 18.6; Sacramento (21,500), 19.7; Los Angeles (11,186), 20.2; Stockton (10,288), 13.6. A striking feature being that in many of the smaller towns, and even in some of the county populations, the ratios of deaths are larger than in the cities; and the ratios from pneumonia, with the single exception of Tulare County, being larger than from any of the diseases usually estimated as zymotic; in the exceptional case the excess was from diphtheria.*

The subject of registration, and more efficient legislation for its accomplishment, is again urged by the Secretary, Dr. F. W. Hatch, as a special necessity of efficient health service. He also furnishes, in appendix, special reports on the "Mineral Springs of California," and the "Sanitary Condition of Sacramento." In mineral springs California is peculiarly rich, and many of them are already in considerable repute for their medicinal properties. It appears by the report that Dr. Hatch attempted a classification of them as long ago as 1862, in a paper read before the State Medical Society. In 1871 the late Dr. T. M. Logan, then permanent Secretary of the State Board

* For the relations of pneumonia to certain filth diseases and to cold weather, more in detail, the reader is referred to the relations of certain filth diseases to cold weather, on other pages of this number.

of Health, took up the subject, and made a somewhat elaborate report. Still later John S. Hittell, Esq., gave a resumé of them, and a favorable comparison with certain European springs of high repute. In the paper now before us they are classified on the predominance of the principal ingredients into: alkaline, saline, chalybeate and sulphurous; and their properties briefly given severally, according to the best authorities. Their external use is also discussed to some extent, and the respective virtues of different temperatures. Analyses of several are given, showing properties favorably comparable with the best mineral waters elsewhere.

"The sanitary condition of the city of Sacramento is good, and the death-rate by no means discouraging," Dr. Hatch remarks, in concluding his report, after having summarized a category of intolerably foul conditions: Defective drainage, inefficient sewerage, numerous shallow privy-vaults and cesspools, in some instances located in the cellars; a lake within the city limits, and but a few feet from the principal business street, is daily and hourly befouled by filth deposited in it by the Chinese residents upon its border, and reeking with foul and disgusting odors. Of the water-supply nothing is said: presumably its source is distant from the city and well-protected. But in what the goodness of the sanitary condition of the city consists, excepting that for the present, the mortality of the city, 19.7 per 1,000, and not as high as it is likely to be with increase of population, he fails to show.

Dr. H. Gibbons, Sr., President of the Board, contributes a brief paper on the *Inheritance of Pulmonary Disease;* its possible eradication, with special reference to San Diego. Very little is said in the paper to justify the suggestion. But in a subsequent paper—a committee report to the Governor by Drs. Gibbons, Cluness and Hatch on the *Establishment of a State Hospital for Consumptives*, San Diego is described as a situation of remarkable salubrity, lacking only altitude and a dry atmosphere to make it most commendable for the purpose indicated. The highest portion of the town is said to lie at an elevation of about sixty feet above the sea, and about four or five miles distant. The prominent climatological advantages of the place are a mean annual temperature of 62.11°; spring, 60.14°; summer, 69.67°; autumn, 64.55°, and winter, 54.9°; showing a difference of only 15.58° between winter and summer, and the greatest difference between any two consecutive months 6.12°—October and November.

As a site for the contemplated State Hospital for Consumptives, preference is given to Atlas Peak, in Napa County, 1,500 feet above the level of the sea, with a mean winter temperature of 50°, summer 74°, and a mean annual humidity of 45 per cent., or 51 in winter and

39 in summer. The report on the establishment of a State Hospital for Consumptives is a particularly instructive one to persons affected with pulmonary disease, and in search of climatological advantages, as several of the places reported on in California are among the best in the country.

Dr. J. P. Widney, member of the Board, contributes an excellent practical paper on the *Sanitary Defects in Houses and Manner of Living*, in which he shows the importance of airiness of situation, dryness of soil, dry cellars or none at all, and, at any rate, good ventilation under the house. Situation of the house and of the several rooms in regard to light and sunshine, and the proper placement of all domestic conveniences, are intelligently discussed and urged as essential conditions to a healthy household.

The report is altogether an instructive one, alike creditable to the Board and to the State.

Kirkhide on Hospitals for the Insane* literally fills a great want. The author has long been known to be among the most experienced of American alienists, insomuch that the work now before us comprehends the matured thoughts of well-nigh a half century's devotion to the care of the insane. And while it may be said that no one has had superior opportunities, it may also be said with equal truth, no one has made better use of them than the author of this work—a work which no alienist and few physicians can afford to do without, while for the legislator, architect, and philanthropist—*all* who take an interest in the insane—and who does not?—it is equally indispensable as a standard of excellence.

The International Review has entered upon its tenth volume from that standpoint which philosophers and statesmen tell us is always characterized by an abundance of room. Intent, from the first, of being the medium of the best thought of English speaking people, it at once took a high stand. But recently it has ascended the heights of Boston and there secured as editorial staff Mr. John T. Morse, Jr., a lawyer of culture and fortune, and Mr. Henry Cabot Lodge, a younger Harvard graduate, who has already won his spurs as a stalwart. Thus edited *in Boston* and still published in New York by a house of world-wide reputation, the *International* may well be

* On the Construction, Organization, and General Arrangements of Hospitals for the Insane, with some remarks on Insanity and its Treatment. By Thomas S. Kirkhide, M.D., LL.D., Physician in Chief and Superintendent of Pennsylvania Hospital for the Insane at Philadelphia, late President of the Association of Medical Superintendents of American Institutions for the Insane; Honorary Member of the British Medico-Psychological Association, etc., etc. Second Edition, with Revisions, Additions, and New Illustrations. 8vo, pp. 340. Philadelphia: J. B. Lippincott & Co.

said to occupy the very pinnacle of that altitude which commands the best resources and reflects the richest combination of literary and commercial talent.—A. S. Barnes & Co.

Transactions of Homœopathic Medical Society of Pennsylvania, 1880, 8vo, pp. 380, contains, in addition to the usual committee reports and special papers on practical medicine, one on general sanitary science, the general subject being *The Animal Food Supply of Cities and Towns,* comprehending a consideration of Animal Food as a Marketable Product, by W. H. H. Neville, M.D.; Diseased Meat, by T. M. Strong, M.D.; and Diseases Resulting from the Uses of Diseased Animal Food, by B. W. James, M.D. Dr. James also presents a report on yellow fever, and pays a just tribute to the National Board of Health for its successful efforts in restricting yellow fever in 1879, and publishing a list of vessels supposed to be infected, sailing from Havana in 1880; and heartily commends the rules and regulations of the National Board in reference to contagious diseases in general.

The annual address of the President, Dr. J. K. Lee, of Philadelphia, is especially commendable for its dignified and respectful consideration "of the dominant school," instead of the intolerant and proscriptive denunciation which too commonly prevails among doctors of different sects.

Scribner's Monthly.—A short serial by Mrs. Burnett, author of "That Lass o' Lowrie's," etc., begins in February number. Meantime Mrs. Burnett is writing what promises to be her longest novel for Scribner's. Its scene is laid in Washington. Mr. Cable's new serial, "Madame Delphine," also begins in February, and is to run through three or four numbers.

Lippincott's Magazine begins a new volume and a *"New Series"* with January number, at a reduced price from four to *three* dollars a year, but nothing lacking in its characteristic excellence—retaining all of its old, and adding several new celebrities to its corps of contributors, both literary and artistic.—J. B. Lippincott & Co., Philadelphia.

Publications Received. Louisiana State Board of Health Report, 1880; Louisiana State Medical Association Proceedings, 1880; Wisconsin State Medical Transactions; Report of State Asylum for Insane Criminals, Auburn, N. Y., 1880; Half Yearly Report of Medical Officer of the Port of London, for the year ending 30th June, 1880; Diseased Meat and its Consequences, Noah Cressy, M. D.; N. C. Medical Society Transactions, 1880; Pittsburg Board of Health Report, 1879; Drug Attenuation—Homœopathic Pharmacy.

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SOME SANITARY FRAGMENTS.

By T. J. TURNER, A.M., M.D., Ph.D., Medical Director U. S. Navy.

In a paper read before the American Public Health Association at its annual meeting, held in December, 1880, in New Orleans, upon the "Hygiene of Emigrant Ships," incidental allusion is made to some experimental observations of my own, commenced in June, 1879, upon the rot of wood in ships.

It was stated that the conditions under which such rot occurs had been partially imitated in an improvised culture cell; and it was also remarked that this subject demands to be studied by expert microscopists, more particularly by those who have given special attention, as mycologists, to the development as well as the generic differences of the fungi. Some extended research in the matter soon made it evident that those who understood these things were few; of pretenders to such knowledge there are many. I am not an expert in either branch, but with a view to stimulate investigation in this direction, I shall detail the methods pursued and some of the suggestions that arose from the research. The original apparatus consisted of a watch glass, a saucer, a goblet from which the foot had been broken, and a cigar-box. These were, after a while, supplanted by watch glass, porcelain evaporating capsule, and a glass beaker, as more in harmony with the apparatus of modern scientific research—the cigar-box, however, being retained. In the watch-glass fragments of decaying wood, obtained from a vessel of war, and which had previously been moistened with bilge-water, were placed; this part of the apparatus was then rested in the capsule, the beaker inverted over it, and bilge water poured into the capsule so that the watch-glass, freighted with the decaying wood, just floated inside the beaker. The whole apparatus was then covered up in a cigar-box, and left at ordinary temperatures in a room. It is apparent that in this manner there had been secured wood in the process of decay, in a moist, stagnant atmosphere, surrounded by bilge-water, not exposed to the influence of light and subject to the ordinary variations

of temperature. An artificial bilge, in fact, was made and used as a culture cell. To more closely approximate the natural surroundings of decaying wood on shipboard at times, carbon dioxide, evolved from the usual materials, was conducted into the beaker in the ordinary manner known to all students of pneumatic chemistry. In other experiments the fragments of wood were moistened with the ordinary soda-water of the shops. The microscope used to study the changes occurring was a small Queen's student's microscope, and with low powers. Mycelium threads in some instances appeared to grow rapidly; spores in some instances were more numerous than in others, and at times growth seemed to be exceedingly vigorous, whilst at others no change appeared to be taking place. In the varying changes of the lower forms of organic life, however, I am led to believe that morphological appearances are not to be relied upon solely as determining "species," and I do not think that calling any change progressive or retrogressive should be dependent, as it is in most instances now, upon the ideas rather than the facts of the observer. Not having apparatus for their production, no photo-micrographs of the changes occurring are presented. But out of this failure to secure so very desirable a history of the process of rot in wood grew some interesting work.

The humidity of the air on shipboard is a known fact; the amount of carbon dioxide in the air is a matter of daily registration on naval vessels; the temperature of various localities on shipboard are also noted daily, and it remained, therefore, to add to these conditions under which wooden vessels decay, some considerations upon bilge-water and its primary source, sea-water. Bilge-water—Ger., Kimmwasser; Fr., Eau de cale; Sp., Agua de pantoque; Ital., Acqua trapelata—being for the most part the result of the sipage and leakage of sea-water through the seams of the vessel, and undergoing some change in its primary constituents, of necessity has some chemical and other relations to this source. To be sure bilge-water has frequently added to it by accident the results of the scrubbing and washing of the decks, and not infrequently has added excremental matter from the bilges being used by sailors as a water-closet, under circumstances that render the detection of the perpetration of such a nuisance almost impracticable. From a number of observations upon bilge-water, the following are presented as suggestive to future investigators. It may be as well to observe just here that, in all examinations the water alongside the vessel from which the bilge-water is derived should be examined at the same time, so as to observe by comparison what changes do occur in the process of sipage; the age of the bilge-water should be noted, the locality, the season, and also the structure of the vessel, as to being wholly built of wood, of iron, or composite. It will be observed that the specimens examined are recent in character, and that numerous observations, both at sea and in port, especially in tropical seas, where temperature marks the realms of certain forms of animal and vegetable life, are needed to complete this study. Of the recent specimens examined, the following sample of bilge-water was from a wooden merchant brig:

The water was of a light brown color, semi-opaque, without signs of organic life, saline to taste, with a faint odor, slightly alkaline to

turmeric and litmus solutions, gave a faint reaction with fresh tincture of logwood, showing the presence of H_2S as well as with moistened acetate of lead paper, no reaction with sodium nitro-prusside, and deposited, on standing, a light flocculent deposit of clay, evidently from the ballast. The specific gravity of the specimen at 62° F., by balance, was 1025.4. The total solids amounted to 38.08 per 1,000, which lost, on ignition, 7.04 parts. It contained 27.0 parts per 1,000 of chloride of sodium.

In 1,000 parts:

Sulphates, estimated as		sulphuric acid	.271
Chlorides,	"	" chlorine	16.37
Magnesium,	"	" magnesia	1.92
Lime,	"	" lime	3.14

Of free ammonia, .128 parts in 100,000; of albumenoid ammonia, .064 parts in 100,000, with no evidence of the presence of nitrates or nitrites.

The following specimen was obtained from an iron merchant steamer: The water was colorless, clear, without trace of animal life, saline taste, faint odor, neutral in reaction to turmeric and litmus, gave faint traces of a reaction with acetate of lead paper, fresh tincture of logwood, and with sodium nitro-prusside. The specific gravity of the water by balance was 1011.7 at 62° F. The total solid equaled 20.68 in a thousand parts, which lost, on ignition, 6.04, and contained 12.64 parts of sodium.

In 1,000 parts:

Sulphates, estimated as		sulphuric acid	.96
Chlorides,	"	" chlorine	8.32
Magnesium,	"	" magnesia	.869
Lime	"	" lime	.162

Of free ammonia, .004 in 100,000 parts; of albumenoid ammonia, .076 in 100,000 parts, with no evidence of the presence of nitrates or nitrites.

The following specimen was obtained from a wooden vessel of war: The water was of a dark inky color, opaque, filtration separated a fine black flocculent deposit, principally composed of coal-dust, with a few woody fibres and cells, presenting, however, no appearance of active animal life, with a saline taste, strong odor of H_2S, alkaline in reaction with turmeric and litmus, reaction marked with moistened acetate of lead paper and fresh tincture of logwood showing the presence of H_2S, with faint reaction upon sodium nitro-prusside, showing presence of other sulphides. The specific gravity, by balance, of this specimen, was 1,023 at 62° F.; the total solids equaled 34.18 in 1,000 parts, which lost, on ignition, 5.36 parts, and contained 24.60 parts of chloride of sodium.

In 1,000 parts :

Sulphates, estimated as		sulphuric acid	1.82
Chlorides,	"	" chlorine	17.02
Magnesium,	"	" magnesia	.893
Lime,	"	" lime	.26

Of free ammonia, .011 in 100,000 parts; of albumenoid ammonia, .104 + in 100,000 parts, with no evidence of the presence of nitrates or nitrites.

A sample of bilge-water from a sailing brig from Cardenas presented the following physical and chemical characteristics: Color, dilute inky, perfectly opaque, with a strong saline taste, and smelling strongly of H_2S. It was alkaline in its reactions to turmeric and litmus papers, blackened acetate of lead paper gave a purplish tinge with fresh tincture of logwood, and a faint reaction with sodium nitro-prusside. The specific gravity at 62° F., was 1032.8, by balance. The total solids in 1,000 was 68.60, which lost, on ignition, 39.70, and contained 25.82 parts of sodium chloride. There was no evidence of nitrates or nitrites. On igniting "the total solids" the mass charred readily, and gave off a decided odor of caramel.

In 1,000 parts, there was of

Sulphates,	estimated as	sulphuric acid	1.912
Chlorides,	"	" chlorine	16.55
Magnesium,	"	" magnesia	1.11
Lime,	"	" lime	.462

On distilling this water, to determine the free ammonia, the distillate gave a citron-green precipitate, interfering with the determination. A second quantity, from which H_2S had been removed, had the same reaction. The reduction of the permanganate solution was so great that it was not considered practicable to determine the albumenoid ammonia. In a warm room the water underwent acetic fermentation, and sugar was evidently present—derived from the cargo. The age of the various specimens I could not obtain.

The determination of the amount of organic matter by the potassium permanganate process was not attempted, although not overlooked. The value such a determination has, as corroborative of the presence of organic matter, is not to be underestimated. What is needed to perfect these investigations is some method of distinguishing the organic matter undergoing change as to its origin from either the animal or vegetable world, as well as an estimation of the quantities of each when both are present in the water. For the further consideration of bilge-water, the reader is referred to Parke's Hygiene, 5th ed'n, p. 688; and Vol. II., p. 181, Hygiene and Public Health, by Buck.

The chemical composition of sea-water, from which bilge-water is mainly derived, varies principally in the relative proportion of saline ingredients, thus: In 1,000 parts the waters of the North Sea contain 30.46 of saline matters, 23.58 parts being sodium chloride; the Atlantic has 36.30 of saline matter, 25.18 being sodium chloride; the Black Sea, 17.66 of saline matter, 14.01 being sodium chloride; the Sea of Azof, 11.87, 9.65 being sodium chloride; and the Caspian, 6.29 of saline ingredients, 3.67 parts being sodium chloride. The average composition of 1,000 parts of sea-water is as follows:

	In the British Channel.	In the Mediterranean.
Water	964.743	962.345
Sodium Chloride	27.059	29.424
Magnesium Chloride	3.666	3.219
" Bromide	.029	.556
" Sulphate	2.296	2.477
Calcium Sulphate	1.406	1.357
" Carbonate	.330	.114
Potassium Carbonate	.765	.525
Specific gravity,	1027.4 at 60° F.	Specific gravity, 1025.8 at 70° F.

From many hundreds of observations upon the specific gravity, etc., of sea-water, the following is the highest specific gravity that I have recorded:

July 26, 1855, lat. 11° 23′ N. Lond. D. R. 79° 54′. Surface temperature of the sea, 66.5° F. Temperature of air, 67° F. Specific gravity by hydrometer (W. H. Pile, manufacturer, Philadelphia), 1030. This observation, it will be noted, was made in the Pacific Ocean, on the coast of Peru, north of Callao. No attempt has been made, as far as I am aware, to determine the amount of organic matter existing in sea-water, although it must be present in appreciable quantities, from the known plenitude of animal as well as vegetable life existing in the ocean. May not these organic matters, undergoing some metamorphoses in the bilges, be the "*fons et orijo*" of some of the febrile movements occurring on shipboard? I make the inquiry, and so if these fragments, gathered together at odd moments in rather a busy life, will stimulate some observer to a detailed investigation of the whole matter, I think I can promise a pleasant, useful occupation, and one which certainly possesses the charm of novelty.

Sanitary Rules for Public Buildings.—The following rules, to be observed in the construction of all buildings erected under her Majesty's Office of Works, have been prepared and issued by the Secretary to the Office of Works:

1. All water-closets and urinals shall be constructed so that one wall at least of such closets and urinals shall be an outer wall of the building.

2. All soil pipes shall be carried outside the building, and ventilated by means of pipes leading the foul gases above the highest point of the building. Such pipes to be carried to points removed from chimney stacks.

3. Separate cisterns shall be constructed for the water-closets and for the general purposes of the building. No tap or "draw-off" shall be affixed to any pipe communicating with a cistern supplying a water-closet or urinal.

4. All waste pipes and overflow pipes of cisterns shall terminate in the open air, and be cut off from all direct communication with drains.

5. Great attention shall be paid to insuring thorough ventilation in all rooms. Rooms so high that their ceilings shall be more than two feet above the top of the windows, corridors, staircases and other open spaces shall be specially ventilated so as to prevent the accumulation of stagnant air.

6. All main drains should, where practicable, be formed outside the building. In the event of its being necessary to carry a main drain underneath a building, it must be trapped immediately outside the main wall, and a ventilating pipe must be carried from that point to the highest part of the roof, as under rule 2.—*Jour. Soc. Arts.*

INSANITY—WHAT HAS BEEN DONE TO PREVENT OR ARREST ITS PROGRESS.

By NATHAN ALLEN, M.D.

In was not till some twenty-five or thirty years ago that the idea of preventing diseases, to any great extent, was fairly entertained. This grew in a great measure as a result from the registration reports of deaths in Great Britain, made annually by Dr. William Farr. In this way the causes of death became better and more generally understood. It was found that many of these causes were under human control, and could be removed by legislation and other means. A few medical men and others engaged at once in the work of enlightening the public upon the laws of health and life. Sanitary associations were formed, and the press became enlisted in health reform. Books and reports on the subject began to multiply, and soon numerous acts in its favor were adopted by Parliament. Sanitary reform is now one of the leading topics before the British public. To such an extent have their improvements been carried, the fact is now established that about one-third of all the disease and mortality that once prevailed can be prevented. Though this reform has advanced much farther in Great Britain than it has in this country, still the reform is rapidly gaining ground in the United States. Boards of Health are formed in nearly half the States; books, reports and publications on the subject are multiplying every year, and stringent legislation in its favor is taking effect in many different States, as well as with the national government.

But how is it with insanity? What has been done to prevent it or arrest its progress? Something may have been done indirectly by a better observance of sanitary laws, but nothing directly, by any intelligent and systematic measures. On the other hand there has been an immense expenditure of time, labor and money to *cure* the insane. This unfortunate class have been gathered into hospitals with a two-fold object—one of *safety* and the other of *cure*. Once it was thought that a great majority of the inmates sent to these institutions were cured; but, of late years, this is found to be a mistake. The fact is now generally admitted that only from thirty to forty out of every hundred cases treated in the hospital are actually cured, while eight or ten annually die. This leaves full one-half of all persons becoming insane *uncured;* some few perhaps improved, but large numbers sink into a state of chronic disease. The public is sure to be acquainted with the number *cured*, but very little is said of those discharged *unimproved*, or, it may be, injured, by their confinement and treatment.

Once it was thought that lunatic hospitals would do a great deal to check insanity, but in this the public has been disappointed. While many recoveries and deaths are reported every year, still this unfortunate class increases more and more. The census of 1870 afforded positive proof that the insane in Massachusetts increased then faster than the population; there is no doubt but the census of 1880 will

show a still greater increase. It is very evident if the disease is to be checked resort must be had to other agencies than lunatic hospitals to do it.

The inquiry arises: What relation do these institutions sustain in respect to the prevention of insanity? And what are the promises or prospects in this direction? Says the Superintendent of the McLean Asylum, the oldest institution in New England: "For the treatment of insane persons we could wish some practice more encouraging in its remedial effects might be devised. As now administered, asylums for such unfortunates afford little more than a place where they may be isolated from society, kindly treated, and a watchful oversight maintained to prevent them from committing injury upon themselves or their attendants."

Says another superintendent, for many years over the oldest State hospital in Massachusetts: "Lunatic hospitals do not prevent insanity, because they do not, by the intercourse of their officers with society at large, by their published reports, and by their general relations to the public, seek to enlighten the people upon the subject of insanity—its predisposing tendencies, its relations to intemperance, poverty and crime; and therefore they do not improve the community in this respect, except in removing from its care some of its greatest burdens." Says another Superintendent, for many years over the next oldest State hospital, and which for a long time has been the largest: "The more we see of mental disease in its various forms, the more we are convinced that the study of its *prevention* is infinitely more important than even the study of its *cure*, and that the dissemination of more correct views of the true way of living, and a more rigid observance of the laws of health and nature would greatly diminish its frequency, that is, insanity."

With a constant increase of insanity, and a diminished rate of cure, what can be expected but larger and larger accumulations of this unfortunate class? Their support is becoming everywhere very burdensome, and as to all appearances it is likely to become more and more so. Many persons are inquiring what is to be done; where is the remedy? Must we build more hospitals or make some other provisions? Much has been said of late respecting the superiority of the management of hospitals, and the treatment of the insane abroad over that in this country, but as to the matter of preventing the disease, very little abroad has evidently been done. The commissioners of lunacy for Scotland in a late report state that "It is impossible to come to any other opinion than that insanity is, to a large extent, a preventable malady; and it appears to us that it is in the direction of preventing its occurrence, and not through the creation of institutions for it treatment, that any sensible diminution can be expected in its amount." Says Sir James Coxe, before a committee of Parliament: "The fact is, we have allowed a terrible evil to grow up among us, and we have been content to lop the branches, leaving the growth as luxuriant as ever, instead of directing our efforts to destroy it at the roots. Insanity is a disease of ignorance—ignorance of the human organism and the laws which regulate it; and the only way to check its growth is by a general diffusion of a knowledge of those laws."

We have here the highest expert testimony in Great Britain with reference to the importance of preventing this great evil. It would seem, then, that from the history of lunatic hospitals and from testimony on all sides, that no direct and systematic means have been employed to check this "terrible evil." It is clearly evident that the same course must be here pursued as with reference to other diseases. Ascertain first their causes, and then diffuse information generally on the subject. This may be done in a variety of ways: by enlisting the press, through journals and books, by family and educational training, by legislation and associated action.

It may be said the causes of insanity are involved in so much mystery and obscurity that they cannot be found out. This might have been said a few years ago respecting some other diseases which are now being correctly understood. Let the same means be as carefully and thoroughly employed here as in respect to other diseases, and the causes of insanity will be far better understood and its treatment will be more successful than at present. There have been a large accumulation of facts and figures, collected in books and hospital reports, which, if brought together and analyzed, would throw much light on this subject. But there has been very little demand on the part of the public for such information, and no inducements have been offered by legislation or the managers of hospitals for such services. Almost any amount of money can be expended in building and managing lunatic hospitals, but nothing, comparatively, to prevent insanity. If one-tenth of the means now so lavishly bestowed upon this unfortunate class in large institutions were expended in different ways to *prevent insanity*—in cutting off the supplies—what a vast difference it would make in diminishing the number of the insane and reducing the amount of suffering! Great advances have been made within a few years, in the prevention of disease generally, by diffusing a knowledge of the laws of health and life. By a faithful application of sanitary agencies it is estimated that one-third of the sickness and mortality can be prevented. Why should not one-third of the existing insanity be prevented by resorting to similar measures? There is this advantage, that in preventing diseases and improving health generally it helps to check insanity.

A primary object of the American Association for the Protection of the Insane is to prevent insanity. It proposes to use the same means which the advocates of health reform have found so beneficial. But in carrying on this work, legislation and the co-operation of the managers of hospitals must also render assistance. It is not wise to build great institutions and make large appropriations for carrying them on, without doing something to remove the causes which necessitate such measures. Let the *prevention* of insanity then receive some attention as well as the cure. The claims of humanity and public economy demand it.

SANITATION AND EDUCATION.*

By Hon. John Eaton, LL. D., U. S. Commissioner of Education.

In calling attention to education and sanitation I do not propose any exhaustive treatment of the manifold relations between them.

Every one asks with supreme interest, "How long shall I live, and under what conditions?" The energies of the individual and of civilization are invoked to prolong life and increase its comforts and success. The story of this struggle for life requires in its rehearsal none of the imagery of poetry: figures tell it in the shortest terms.

The last complete census of our own country, that of 1870, shows that over 40 per cent. of the population die under five years of age. Nearly half of the mourning is over the deaths in these tender years. How large a proportion of the population is sick on any given day has not been ascertained, but as showing the supply or the lack of comforts of life, Dr. Jarvis, an expert in these statistics, poin'e out that the white population is about evenly divided between thos: that are self-sustaining and thos: that are dependent, while of the colored population, 55 per cent. are dependent.

Education and sanitation represent great forces invoked by man in this endeavor to prolong his life and improve his condition—the one, the science and art of culture; the other, the science and art of health. As terms, they may not always have been present in the vocabulary of the ancients, but the ideas they express, the facts which they include, and the objects at which they aim, are ever present in human endeavors, and are as universal in man's experience as death, and sickness, and ignorance, which they antagonize.

Man finds for himself, as for all the lower orders of animal and vegetable life, everywhere, over against the law of good, the law of evil; the nerve that tells of enjoyment is the nerve that tells of suffering. The principle of growth may be everywhere applied to prevent or perfect, and in its neglect appears the law of decay. Wrapped in the same bundle are the laws of health and disease. Since impressed with the image of his Creator, and receiving the command, "be fruitful, and multiply and replenish the earth, and subdue it, and have dominion over the fish of the sea, and over the fowl of the air, and over every living thing that moveth upon the earth," man, as the crown of this visible creation, has found it possible to bring under control, for his good, all of his own powers, and all of the forces and conditions of nature around him. Slowly, and with halting and sometimes backward step, and generally through devious course, man has reached his present marked degree of facility in commanding the secrets of nature.

In the place of the wigwam or cave of the savage he rears the mansion of civilization, ventilated and heated to increase health and promote length of days, inspire his purity, and please his sense of the beautiful.

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*Read before American Public Health Association, New Orleans, December 9th, 1880.

For his food he transforms the crab-apple into the pippin, the bitter almond into the luscious peach, the wild ox into the Alderney or the Durham, the wild sheep into the improved Saxon. He makes the barren soil productive, he transforms the malarial or poisonous conditions of his habitat into the salubrious and healthful. For clothing he no longer tolerates the leaf of the tree or the rude skin of the animal, but adorns himself with garments wrought by the highest skill from the improved cotton, the cultured merino, the developed silk, adorned with colors as rich as the famed Tyrian or Venetian dyes. His spiritual, intellectual and æsthetic aptitudes are supplied by invoking a corresponding change in agencies, objects and instruments. The obstructions to comfort and health imposed by time and space he assails with the powers of steam and the velocity of the lightning. In all his transformation he has applied the semi-creative principles of culture at once so simple and so universal. In his observation and experience he has found a certain uniformity, a certain order of relation of facts, and called it law; he found the relations of cause and effect, that establishing one condition produced another; he could do this for himself, or he could teach to others the principles which he followed for his own benefit. This was education which imparts knowledge, and nourishes or trains; beginning with every one of us before we reach the cradle, it cannot end before the termination of this mortal existence. It may be perverted and bad, and hasten human ills. There is education in crime; in deed, criminals have a life and language of their own, and have attempted the preparation of literature as well as implements of their business. If the purposes or methods of education are an admixture of what ought and what ought not to be, its results must correspond, and at best can be only partially good. We can conceive that education can be wholly good, and yet we rarely find it so in this state of imperfection. It may be wholly bad, and yet it is not often so, even in savage life. The instincts of self-preservation, the pure selfishness of nature, find out and employ some of the right processes of education or betterment.

Education may, nay, must go on either by neglect or by intent; human conditions cannot be stationary. Right education for its highest ends adopts the precepts of morality toward man and piety toward God. It practises and teaches conformity to the laws of matter and the laws of spirit. Wherever in thus carrying forward human progress it encounters disease of mind and body, or trains in the practice of health or teaches its doctrines, it enters into relations with the science and art of sanitation.

Just as a right education is a preventive of crime, and cheaper than the machinery for its detection and punishment, so is sanitation a preventive of disease and cheaper than the appliances for its cure.

This right education should train the child, the adult and the community in the precepts of sanitation, so that every individual may have secured to him that first requisite of power, labor and happiness, a sound mind in a healthy body.

Education is false or impotent without the doctrines or training of sanitation; as nature itself may be healthy or unhealthy, so may that second nature called habit, added by education.

Put unhealthy treatment to a diseased system and how soon that

system will vanish like vapor. On the other hand, bring up the child of sound mind and body in the knowlege and practice of the principles of health, and what a promise have his maturity and vigor! These doctrines are not new; indeed, they are so old and recur so frequently in literature that their statement may seem stale, though required by the exigencies of the day. The philosopher finds them illustrated in all his comparative study of races, nations and systems of belief. The Jew and Christian note them in the remarkable sanitary code given the Hebrews. They point to the restraints it imposes on man's destructive passions and appetites, and the healthfulness of its moderation and its rules of cleanliness and for eating meats and things clean and unclean, and pronounce the descendants of Jacob, scattered in every nation and every clime, so full of physical and mental vigor, ever-present indications of the excellences of this code given in the infancy of the race.

The Levitical priesthood appears not only as presiding at the altar over the rights of man's worship of Deity, but as the depositary of learning for their own and the other tribes, and as especially taught in all the knowledge of preventive and curative medicine possessed and practiced in their times. The same was true respecting the Egyptians, among whom the Israelites were so long in bondage. Herodotus found the Egyptian priesthood a sort of nobility, whose education included not only instruction in history, national and civil, astronomy, geometry, jurisprudence and civil polity, but in medicine. John observes that "they were practicing physicians, inspectors of weights and measures, surveyors of lands, astronomical calculators, keepers of the archives, historians, receivers of the customs, judges, counsellors of the King, who was himself a member of their order."

Hippocrates ascribed the origin of medicine to the discovery that the sick were injured by the use of food which was beneficial in health. But the progress of the science or art of medicine, whether curative or preventive, has even been dependent, like that of mathematics or chemistry, or any science or art, upon education.

Education must teach, train and prepare the men that make its discoveries and announce its precepts, and must also teach them to others, and thus disseminate a knowledge of them for general benefit.

Greek history and literature present interesting illustrations of the interweaving of the precepts and practices of education and sanitation. Mitford considered it remarkable that Homer nowhere speaks in plain terms of sickness. He, indeed, mentions diseases, but as the effect of the immediate stroke of Deity. The marked desire of the Greeks for physical excellence inspired them to a course of life conducive to health. Homer has left us many pictures of feasts and relaxations, and once mentions drunkenness as a warning example.

Exercise was the delight of his heroes, and excellence in manly sports their pride. The Phocions exhibit their games before Ulysses, that he may relate—

> "How in the boxing and the wrestling match,
> In leaping and in running we excel."

Grote observes that Greek towns were built "at some distance in-a nd, on a rock or elevation which could not be approached without

notice, or scaled without difficulty," thus furnishing conditions favorable to pure air and to good drainage, and to the ideal town of Plato. This philosopher calls attention to the fact that Homer feeds his heroes, when they are campaigning, on soldiers' fare. They have no fish, though they are on the shores of the Hellespont. Sweet sauces are not even mentioned by him. It has been held that the laws of Lycurgus, in force 700 years, made a race totally different from any other.

Plutarch considers "the most masterly stroke of the great Spartan law-giver was the ordinance that he made that all should eat in common of the same bread and same meat, and of kinds that were specified, and should not spend their lives at home, lying on costly couches, delivering themselves into the hands of their tradesmen and cooks, to fatten them like greedy brutes, and to ruin not their minds only, but their bodies, which, enfeebled by indulgence and excess, would stand in need of long sleep, warm bathing, freedom from work, and, in a word, of as much care and attendance as if they were continually sick." Their public repasts were schools of sobriety and temperance. Their most famous dish was the black broth, the relish for which was found in a cold bath in the Eurotas. He provided abundant exercises and such displays as induced both men and women to care for their health. Mitford emphasizes the fact that he required the women to be specially trained, that their offspring might be vigorous; if they were not they exposed them on Mount Taygetus. Education was publicly conducted and aimed at endurance, courage and strength. Plato declared that those employed in the Spartan secret service "wander over the whole country by day and by night, and even in winter have not any shoes on their feet, and are without beds to lie upon and have no one to attend them." Lycurgus, knowing that "a merry heart doeth good like a medicine," prescribed mirth for his people, and the Spartans were ever "famous for their mirth guided by wisdom." Of the laws of the Athenians, as given by Solon, little is written; but Plutarch and Grote, as well as others, call attention to the fact that they reached all departments of private life, and regulated even the walks and feasts of the women. Says Curtius: "In the shady wrestling grounds which spread themselves out in the neighborhood of the city, the young Athenians were to unfold the vigor of their bodies and their minds, and grow to be a part of the State, which demanded men not dulled in Spartan fashion, but fully and freely developed."

Grote observes that "Pythagoras appears as the revealer of a mode of life calculated to raise his disciples above the level of mankind and to recommend them to the favor of the gods."

"The Pythagorean canon of rule," observes Grote, "was distinguished by a multiplicity of abstinences in alimental and other physical circumstances of life, which were held to be of the most imperative force and necessity, so that offenses against them were, of all, the most intolerable." Temperance was enjoined, exercise required, and superiority of mind and body sought. Their diet was chiefly vegetables, and so spare as to become proverbial. Juvenal intimates that a feast for a hundred Pythagoreans might be provided from a farmer's garden.

Hippocrates appeared as the special apostle of hygiene. He declared that men ought to study the nature of man; what he is with reference to that which he eats and drinks, and to all his other occupations and habits and to the consequent results from each. However cautious and feeble his medical practice, he urged attention to diet, and in his treatise concerning airs, waters and places, enunciates great principles of public health. He speaks of medicine as an institution of nature. He describes diseases as congenital and endemic, or as traceable to regimen, locality or seasons. He says that he that would understand medicine must study winds, waters and localities. He points out the relation of the health of a people to their environment. Attention has been called to the fact that in the earliest times among the Greeks a person's house was used as his place of sepulture. Later it was forbidden to bury within the walls, at least in Athens. At Megara and Tarentum the graves were in a particular part of the city. At Delos, from the time of Pisistratus, no graves were allowed in sight of the temple, and after the sixth year of the Peloponnesian war, nowhere on the island. From Plato's works it appears that if any one intentionally polluted the water to be used by another, whether the water of a spring or of a reservoir, he would let the injured party bring the cause before the wardens of the city. He remarked that "when disease and intemperance multiply in a State, halls of justice and of medicine are always being opened." He would "feed the people on such provisions as are required by trained warriors, who are men of temperance and of courage." Elsewhere he specifies, "they will feed on barley and wheat, kneading the flour and making noble puddings and loaves. These will be served up on a mat of reeds or clean leaves, themselves reclining the while upon beds of yew or myrtle boughs. * * * Of course they will have a relish, salt and olives and cheese and onions and cabbages and other country herbs which are fit for boiling; and we shall give them a dessert of figs and pulse and beans and myrtle-berries and beech-nuts, which they will roast at the fire, drinking in moderation."

Thus he expected the people "to live in peace to a good old age, and bequeath a similar life to their children after them." It is remarked that the daily bath was by no means so indispensable with the Greeks as with the Romans, but as far as the bath was necessary to cleanliness, its neglect was considered as a matter of reproach.

We are told that the public baths were numerous in all Hellenic cities, and in the private dwellings of the better class a chamber was always set apart for the bath.

Physical training occupied a prominent place among the early nations of the Greeks. Plato held "there ought to be public teachers of gymnastics, receiving pay from the State, and their pupils should be the men and boys, and also the women and girls who are to know all these things." In education, largely physical, he saw the continuation of the State, "for good nurture and education implanted good constitutions, and these goods, having their roots in a good education, improved more and more."

Rome, even to-day, in the *cloaca maxima*, or the great sewer, the remains of aqueducts and baths and other monuments, points to the

early attention given to the subject of hygiene by the people of the imperial city. Lydell calls attention to the prohibition of burials in the city as early as 260 B. C. From Gibbon we have the affirmation that "all quarters of the capital and all the provinces of the empire were filled with amphitheatres, theatres, temples, porticoes, triumphal arches, baths and aqueducts—all, whether designed for pleasure or utility, were variously conducive to the health of the meanest citizen."

Mommsen says that "the bodily exercises of Roman youth advanced from ball-playing, running and fencing to the more artistically developed Greek contests." Another writer observes that "the daily bath, and previous to it strong exercise, were inseparable in the minds of the Romans from the idea of a regular healthy life." The resources of architecture were brough into requisition in the erection of large buildings for baths. The ornamentations of art were added, and they became the places of amusement. Out of their ruins have been dug some of the most priceless statues that adorn modern museums. The Pantheon was merely an entrance to the baths of Agrippa. The visitor is amazed at what remains of the baths of Caracalla and of those of Diocletian, which alone contained 3200 marble seats. Even libraries were introduced, and lectures and disputations of philosophers.

It is possible that in the more ancient times the use of the cold water bath was the prevailing one, and persons of simple habits of life adhered to this.

"Perspiration and appetite, which earlier generations obtained by corporeal exertions and agricultural labor, were attained by a later race by means of sudatoria and hot baths."

Strabo observes: "So plentiful is the supply of water from the aqueducts that rivers may be said to flow through the city and sewers, and almost every house is furnished with water-pipes and copious fountains." Again he says: "The sewers arched over with hewn stones are large enough in some parts for a wagon loaded with hay to pass through." Another writer states that "Agrippa, when he cleansed the sewers, passed through them in a boat." The Roman military system, in many points, shows an appreciation of sanitary principles. At one period we find the imperial city divided into four police districts. Among the sanitary duties of the police were the repair of drains, public buildings and places, proper cleansing and paving of the streets, the prevention of nuisances, the supply of the market of the capital with good and cheap grain, the destruction of unwholesome articles of food, and the oversight of baths and public houses. Cæsar proposed to reduce the malarial influences around the city by draining the Pontine marshes.

Pushing our inquiries for the relation of educational and sanitary considerations among the early Christians, we find that some of them were unfortunate in misapprehending the teachings of their great Master. He taught the subordination of the body to the high purposes of the soul, and enforced purity even to the very thoughts. His followers were to be living temples for His spiritual indwelling.

They were to withdraw from sinful practices and associations. They were to be temperate in all things. It would seem that here was the basis as well as the highest motive for a correct and complete

system of sanitary doctrines in their application to the individual in all his relations as a member of the family or the church, or society or the State. Indeed it is claimed that all high attainments of sanitary science and art in recent years among the nations leading in Christian civilization are in no small measure due to the precepts of Christianity. But, unfortunately, there were those who early, under the influence of misinterpretation, became ascetics, and would literally pluck out the right eye or cut off the right hand that offended.

Persecution favored their retirement to caves and their separation from the usual and proper conditions of life. The night of the Dark Ages brought no adequate corrective. Indeed, amid their darkness, although Christian doctrine places cleanliness next to godliness, there appeared those calling themselves Christians who looked on personal dirt, like the old hermits of Thebaid, as a sign of sanctity.

A similar obscuration and perversion came over the doctrines and practices of education.

Bacon is often quoted as observing that the past ever deserves that men should stand upon it for a while to see which way they would go, but when they have made up their minds they should hesitate no longer, but proceed with cheerfulness, and I have thought it not unfit to recall so much of the distant past for the better understanding of the present condition of educational and sanitary relations, to the consideration of which our subject now brings us.

The first centuries of the new era were preparing the way for the more recent trimphs of both education and sanitation.

Education is a central and all-embracing agency in modern progress; employs all beneficial science and art, and comprehends all that belongs to man's right development.

For his rectitude education enforces the precepts of morality, for his bodily and mental health the precepts of sanitation. According to Sidney Smith's aphorism "it is noble to seek truth and it is beautiful to find it," and we may add, it is godlike to communicate it. Education must promote the seeking, finding and dissemination of all truth—sanitation included.

Not until the chains were broken from education and it was given full freedom to make use of all proper resources for man's culture, and to consider the adaptation of methods, subjects, exercises and aims to the age, temperament—in a word, to the nature and environment of the individual, could education itself appear in its true character and bring forth its proper fruit. In a sickly or feeble nature, or an unwholesome *habitat*, education seeks to produce the conditions of health. It declares to every one, in the language of Fuller, that "only in a strong and clean body can the soul do its message fitly." We can justly apply the words of Parkes—both education and sanitation appeal to man's universal desire for life and freedom; they both "promote efforts for obtaining the most perfect action of body and mind during as long a period as it is consistent with the laws of life." In other words, education and sanitation unite in endeavoring to render growth more perfect, decay less rapid, life more vigorous, death more remote. They join in asking, in the language of the poet, "Who would not give a trifle to prevent what he would give a thousand worlds to cure?"

Both appeal to the individual and the State for consideration and action on the principles of prevention. Only recently has hygiene been recognized as a science of great intrinsic value. Now, physicians, engineers, architects, philanthropists, moralists, and teachers unite in studying to promote it. Statesmen recognize it as a legitimate subject for legislation and administration.

In this country, from the earliest time, here and there, advanced and noble minds have indicated an appreciation of preventive medicine. Dr. Toner points out to us the letters from John Clayton, printed in England, bearing date 1688, giving an account of his several observations in Virginia, in which he treats of the air, water and soil, and indicates the sanitary effect of drainage and the relation of certain diseases to atmospheric conditions.

In South Carolina the records of legislation make mention of an act to prevent the infection of the small-pox in Charleston in 1738, and in 1744 of an act in general terms to prevent the spread of contagious and malignant distempers.

But it should be remembered that the medical department of the University of Pennsylvania (our oldest school for the professional training of physicians) was not organized until 1765; that at King's, now Columbia, 1768; that at Harvard in 1782; that at Dartmouth in 1796, and that at Transylvania in the early years of this century. Our earliest instruction in medicine drew largely on Edinburgh for its inspiration, its doctrines and its forms. All are familiar with the recent establishment of hospitals and asylums for the relief of either bodily or mental maladies. The medical profession are to be congratulated on the progress they have made in curative medicine in spite of the opposition of superstition and ignorance. Humanity is their debtor. Not a few of us here will recall how in our time the public was shocked by the proposition to communicate beyond the limits of the medical profession the elements of anatomy, physiology and hygiene. A great step was taken some thirty years ago when Cutter's works were admitted as text-books into the public schools and academies. Since then the attention, both popular and scientific, given to sanitation has increased in geometric ratio. The true relation of government to public health can only be properly understood by an educated community. "It is not expected," says Dr. Jarvis, "that any action or power of government can directly cause a man to be healthy, but it can work as effectually for this as it can to make wheat grain, or an ox to become fat."

The mind of man can imagine and the hands of man can commit hardly any crime which would not involve the violation of the principles of sanitation, as well as the precepts of morality. The principles of hygiene are closely interwoven with the rights of person and property. On them rests very much of civil legislation and administration. Benjamin Rush said long ago, "I look for a time when our courts of law shall punish cities and villages for permitting any of the sources of bilious and malignant fevers to exist within their jurisdiction."

The late English premier declares "the health of the people is, in my opinion, the first duty of the statesman," and Mr. Gladstone is credited with language hardly less emphatic.

Among us the acknowledgment of a governmental relation to sanitation has naturally followed the consideration given by the State to education, and, as we have seen, for similar reasons. True, laws have from time immemorial affected life and health; but here a more specific reference is made to that legislation and administration which specially aim at the prevention of disease, and which have resulted in the establishment of Boards of Health so as to secure a correct knowledge of the sanitary condition of the people, by systems of registration of births, marriages, deaths and sanitary inspection.

Twenty-two States and a large number of cities have organized Boards of Health. Their investigations have already reached conclusions of incalculable value to society. Their reports are among the most valuable public documents.

The interest these subjects have commanded in medical associations, social science associations, and this American Public Health Association, furnishes a notable sign of progress.

In the form of voluntary action this Association brings together the diverse sanitary influences of the country and tends to harmonize them, and gathers and confirms local effort and organization. Its discussions and papers have done much to disseminate correct ideas of sanitation. Its influence has been specially prominent in devising some fit national action in the interests of public health. Its urgency, emphasized by the appalling destructiveness of the yellow fever, pointing out at once the value and inadequacy of all local effort, called in the comprehensive co-operative aid of the general government, and we have the National Board of Health, crowning all our other civil organizations for sanitary purposes.

This board supplements the work of all the State and city boards by contributing to each information collected from all, as well as from the naval, military, consular, and revenue officers of the government, and from the medical and other experts among its correspondents, and by strengthening all local efforts to stay pestilence and preserve from disease.

Its single function of gathering and disseminating information cannot be duly estimated. It is not creditable to us that there is deficiency or indifference in any portion of the country, but it is gratifying that sanitation is commanding an honorable place in literature—in newspapers, books, and libraries; already it has several periodicals devoted to its promotion. Specially notable are the series of health primers, published in a style available to the largest number, treating such topics as "Our Homes," "The Mouth and Teeth," "The Throat and Voice," "Hearing, and How to Keep It," "Long Life, and How to Reach It," "Summer and Its Diseases," "Winter and Its Dangers," "Sea Air and Sea Bathing," "Preventable Diseases," "The Art of Nursing," "School and Industrial Hygiene." After all we cannot claim to be more than ready for a good start. Much has been accomplished if we are prepared as a people to see what we need and to supply ourselves systematically and adequately. Sanitation, alike as a science and an art, must be nourished to its utmost vigor. It must bring under observation the facts illustrating every type and condition of soil, of climate, of population, rural and urban. Escott remarks that there are three kinds of au-

thority universal in England: First, that relating to pauperism; second, concerning the highways; third, sanitary authority; and eminent authors, while showing the vast progress in securing sufficient and wholesome food and air, and better lodgings for the poor and more healthy homes for the sick, affirm that the whole work of sanitation comes short of its full and complete results for want of better understanding and appreciation by the people generally.

Canon Kingsley in a half-plaintive, half-poetic strain, entreatingly asks: "Why should not the experiment be tried of teaching the people something about the tissues of the body, their structure and uses, the circulation of the blood, respiration, chemical changes in the air respired, amount breathed, digestion, nature of food, absorption, secretion, structure of the nervous system? Why should not the art of keeping one's self alive and well be a part of technical education?"

Each commonwealth should not only have its State Board of Health, but local city, county, town, parish or district board, according to its civil subdivision. Sanitarians, like educators, must believe in and affirm the righteousness of their cause. They alike must seek and accept all co-operative endeavors, whether public or private. There should be clear, definite and mutual understanding. The friends of progressive sanitation, in urging the action of the State, must show that they seek not only what is right and legitimate, but expedient and promotive of personal and public welfare. It would seem that their arguments must prevail, even if driven to the lowest plane of reasoning. Dr. Farr, in taking an economic view of society, set down the minimum value of the population of the United Kingdom—men, women and children—as upon an average not less than some £159 a head. No one can fail to see that as you increase the number of healthy persons, or diminish the days of sickness and the periods of dependence, you add so much to the national wealth. Admit an epidemic or a plague that can only be kept out by proper legislation and administration, and government action may be fairly held responsible for the pecuniary losses incurred. This class of facts must be accumulated and iterated and reiterated for the benefit of those who object to paying a slight tax for sanitary purposes. The legislation of the several States and the decisions of the courts leave no doubt that every child among us inherits the right to an education, the right to proper food, clothing and shelter, and the necessary medical care when sick. Dr. Jarvis has shown that the strength of the State is the sum of all the effective people, deducting all the personal incumbrances, sicknesses, disabilities and imperfections. From twenty to seventy is the period of maturity and efficiency. The labors of these fifty years create substance sufficient, not only for the support of the worker of that time, but for the early years of youth and also the ordinary period of decrepitude after seventy.

(*To be continued.*)

THE SANITARY ASSOCIATION OF LYNN, MASS.*

By J. G. PINKHAM, M.D., Secretary.

The Sanitary Association of Lynn was organized on the eighth of April, 1879, by ten gentlemen, who met for that purpose at the residence of the Hon. Chas. F. Coffin.

The movement cannot be said to have been the outcome of any great popular interest in sanitary science, nor to have been rendered necessary by the occurrence in our midst of a destructive epidemic, like that which has recently devastated some portions of the South. It had its origin, on the contrary, with a few zealous individuals, who felt themselves called upon to preach the gospel of hygiene to a community that was bearing the unnecessary burdens of preventable disease and death.

As a field for missionary work of this kind Lynn is doubtless very much like other manufacturing towns of the same size. It has grown up rapidly since the war. Its houses are mostly cheap structures of wood, built too often upon damp or even wet land, with abounding defects as regards drainage, the means of ventilation, etc. Very little attention has been given to under-drainage as a means of rendering the damp sections of the city more healthy. The population, numbering by the last census something over 38,000, is a mongrel one, containing many foreigners and not a few from the rural districts of New England. There is a fair proportion of intelligent, keen-witted people, but a larger one, I fear, of those who may be justly described as ignorant and stupid, especially as regards the laws of healthy living. The general death-rate is not very high in comparison with other cities, but in some portions of the town it is simply enormous. Consumption is very prevalent, and the zymotics, as a class, frequently so. There has been a degree of popular interest in sanitary matters created of late years by such excellent publications as the annual reports of the Massachusetts State Board of Health (now, unhappily, a thing of the past), but only a few of the more thoughtful and enlightened among the people have taken the pains to inform themselves thoroughly on these subjects. With the great mass of the community there exists only a vague sort of conviction that something ought to be done for the prevention of disease, with no definite knowledge either of general principles or methods. The primary idea in starting the Sanitary Association was to change all this, and to help along the great cause of hygiene, public and private, by convincing people, in the first place, that disease is to some extent preventable ; and in the second place, by teaching them how to prevent it. It is natural for those interested in any particular work to organize. We see this tendency in religion, in politics, in business ; in fact, in every department of human activity. The formation of our Society was but an attempt to secure for those interested in sanitary work the increased power and influence which spring from united action. Although this

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course had long been contemplated by some of us, yet the decisive step was not taken until after the Sanitary Protection Association of Newport, R. I., was established. It is to this Newport Association, and its efficient promoter, Dr. Horatio R. Storer, that the credit must be given of having first put into practical operation on this continent the plan which originated with Prof. Fleeming Jenkin, of Edinburgh, Scotland, of organizing societies for the sanitary protection of the homes of members. The idea of protection in the sense of securing systematic and skilled inspection of our dwellings was not one originally entertained by us; but when once suggested was adopted, not only for its intrinsic merits, but as furnishing an effectual means of persuading people to join the Association by enabling us to make a direct appeal to their personal interests. We acknowledge, therefore, our indebtedness to the Association at Newport for having given us by its example the stimulus which became the exciting cause of our action, and for having supplied us with a model after which to fashion our structure. As the idea of protection, in the Edinburgh sense, was at the outset a secondary one with us, the word protection was omitted from the name. It is not improbable, however, that we may come to consider this omission a mistake and to adopt the word.

The rules of organization will show in a general way our plan and methods of work. The objects of the Association are there stated in what was conceived at the time to be the order of their relative importance. The education of the people must precede any successful attempt to secure the enforcement of sanitary rules. Owing to the general apathy on sanitary subjects it was not thought probable that any large number of people would become at once sufficiently interested in the work of the Association to take an active part in it; hence it was deemed best to entrust the general management of affairs to an executive council composed of members selected on account of their known zeal in the cause. This plan has thus far seemed to work well. The annual fee was fixed at five dollars. Of this three dollars is supposed to be paid to the inspectors for the annual inspection. It might be as well to make the fee two dollars, and allow each member to pay for the inspection of his premises at a fixed rate.

The report of the executive council gives a brief statement of what was done during the first year of the Association's existence.

The sanitary tracts for the most part explain themselves. No. 1 was in great part re-written from a circular of the State Board of Health. Such circulars reach but a comparatively few households in any one place; and our object in issuing this remodeled reprint was to give the rules therein contained a greater local circulation. The object of No. 2 will be shown as we proceed. No. 3 was written by a lay member of the Association, and was designed to prepare the way for a more vigorous onslaught on the existing privy system, one of the greatest evils, viewed from a sanitary point of view, with which we have to contend. As the tract itself declares, in effect it is of little use to legislate much in advance of public sentiment in a country like ours, where all power proceeds from the people. Enactments must be sustained by a large minority, at least, of the citizens in order to effect their purpose. We aim to convince householders that the privy in its present form should be abolished before we make a

direct effort to introduce the Rochdale, or some other improved system, as a substitute. Other tracts on this and allied subjects will follow, the Association meanwhile watching for a favorable opportunity to strike decisive blows at this and other evils.

The most important thing thus far accomplished has been the establishment of an independent Board of Health, for which the Association may safely take the credit. The powers of a Board of Health, heretofore lodged with the upper branch of the city government, were seldom exercised, and as a practical fact every householder in the place was a law unto himself, and maintained as many nuisances in the shape of filthy privies, sink holes, piggeries, etc., as suited his convenience or inconvenience. Your correspondent, with some other medical men, had been striving in a quiet way for a number of years to effect a change, but while the greater number of our citizens were indifferent and paid no attention whatever to the arguments advanced, a few actively opposed the movement on the ground of economy. A silver dollar held before the eye was able to hide the sun of sanitary truth. In 1877 the Legislature, at the instance of the State Board of Health, passed an act providing for the establishment of Boards of Health in the several cities of the commonwealth, the same not to become operative in any place until accepted by a vote of the people. Lynn rejected the act by a vote of 312 yeas to 739 nays. Hardly a fifth part of the legal voters in the city took enough interest in the matter to deposit their ballots, although the voting took place at the time of the annual election for city officers, when they nearly all went to the polls. The result was a surprise. But perhaps it ought not to have been. The obstructionists had opposed the acceptance of the law, seeking to influence the people by working upon their fears of increased expenditure and consequently of taxation. Whatever sentiment in favor of sanitary reform existed lacked leadership and was without organization. Medical men were discredited in advance, and their opinions held as of little value on account of a supposed self-interest. How efforts to prevent disease on the part of those who make their living by curing disease could be held to proceed from selfish motives, it is hard to see; yet this point was actually made by one of the most intelligent of the obstructionists.

In 1879 another act was passed by the Legislature, one section of which was designed to enable those cities which had rejected the act of 1877 to reconsider their action, the condition being that a petition calling for the necessary notification should be signed by at least fifty of the legal voters of such city, and presented to its Board of Mayor and Aldermen thirty days prior to the annual election for city officers. It was this act which the Sanitary Association took advantage of, preparing and obtaining the signatures to the petition; circulating 5,000 copies of "Sanitary Tract No. 2—A Special Appeal to the Citizens of Lynn in Regard to the Establishment of a Board of Health;" soliciting the influence of the local press; stationing men at the polls in all the large wards to call the attention of citizens to the vote which was being taken, etc. The result of this vote was—yeas 3,018, nays 204—a very gratifying contrast to that of 1877. The Board of Health thus established (in one sense the creature of the Sanitary Association) is now in active operation and is doing a vast

amount of good. If our Association had done nothing else than to bring about this result, it would have furnished a sufficient justification for its existence, and might now "die the death of the righteous," with the certainty of having, at some future time, a complimentary epitaph on its tombstone. But it has no notion of closing its career while such multitudes of sinners remain to be converted from the error of their ways; while the cure of disease, real or supposed, occupies a more prominent place in the public estimation than its prevention; while men waste their energies in futile efforts to extinguish with water the baleful fires which a secret enemy is feeding with naphtha, instead of ferreting out the rascal and putting a stop, once for all, to his nefarious work.

The Association is very far, as yet, from having reached its ideal. It hopes to count its members by the hundred; to perfect its plan of house inspection, perhaps making of it a system of health insurance, as suggested in the inspectors' report; to enlarge the scope of its benevolent work by furnishing house inspection, analyses of water, food, etc., to poor people, either gratuitously or for a nominal sum; to issue many more sanitary tracts; to hold public meetings for the discussion of sanitary subjects; in fact, to use all the effective means in its power to rouse up the minds of our people and set them to thinking, to the end that greater knowledge may be attained, and that which we already possess faithfully applied for the prevention of disease.

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THE ACTION OF MUDDY WATER ON SEWAGE.*

By Prof. W. H. Brewer, President of Board of Health, of New Haven, Conn.

This paper is offered merely to suggest an inquiry which may or may not lead to results of value to sanitary science.

It has been long known that saline and acid substances, dissolved in water, hasten the deposition of solid substances suspended in that water, and it is claimed that a little sewage in river water tends to make it clearer, and thus improves it for certain manufacturers' uses.

I published several years ago, elsewhere and in another connection, the mutual action of muddy or roiled waters on liquid manures, and then gave some account of the experiments on which certain conclusions were based.

Those experiments were continued and are still going on. They relate to the deposition of clay (and mud) suspended in water, and the causes which hasten and retard it.

I find that the purer the water the longer it takes the last portion of suspended matter to fall to the bottom, and it seems to me probable, that in very pure water, that is, water containing little or nothing in solution, the finer particles of suspended clay might remain suspended, it may be for centuries, before it would be entirely clear, if, indeed, it would ever become entirely clear.

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It will certainly retain an opalescence plainly visible for some years, and specimens I have kept under conditions of quiet and darkness favorable to deposition seem as opalescent now as they did two or three years ago, and yet with the addition of a small quantity of filtered solution of sewage, it becomes absolutely pellucid and clear in a few days, so far as the naked eye can distinguish.

Whether this be due to the saline mineral substances dissolved in the sewage or not I have not determined, but I have proved that some organic matters (and which are not crystallizable) do hasten the settling and clearing.

I will not here discuss the comparative effects of crystalloid and colloid substances in hastening or retarding the precipitation of suspended matter. I will merely say that from some experiments I have made, I suspect that muddy water and sewage *have a tendency* to purify each other.

That sewage discharged into a river of muddy water would be more rapidly purified of its putrescible material (*albuminoids*) than if it were discharged into a river of clearer water.

This would not necessarily extend to the removal of the specific germs of certain diseases, which we know can exist in water of great transparency, but of the dissolved and very finely suspended matter which gives rise to foul smells, and which, in chemical analysis, are taken as the measure of sanitary impurity.

The unpleasant odors which sometimes occur in city waters distributed from reservoirs, and which largely arise from the decay of aquatic vegetation, I have known several times to suddenly diminish, or entirely disappear, with the *roiling* of the water by a heavy rain, and other persons have told me of similar observations.

There are several interesting scientific problems involved in the investigation of this matter, the solution of some of which may lead to important practical results to sanitary science, and I offer this suggestion at this time, hoping that persons living on these Western waters, who have ample means of observation, may make a more practical study of this matter.

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STORM-WATER AND HOUSE-DRAINAGE IN SEWERS.*

By Col. Robert Moore, C.E., Sewer Commissioner of St. Louis.

Whenever the site of a town or city comes to be much crowded the need of sewers for the carriage of surface and storm-water is sure to be felt. In such cases open channels for water, whether natural or artificial, are an obstruction to business, and are certain to become polluted and offensive.

In London, for example, the old river Fleet, which was once a navigable stream, became at last such "a grievous and dangerous nuisance" that in the time of George II. (1735–40) it was arched over and became thereafter the Fleet sewer. Part of the ground formerly

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occupied by the stream was then utilized as a site for a market. (See report from the select committee on sewage [metropolis] 1864, pp. 125, 126.)

In almost every city the early sewers have had precisely the same origin as this one. The open channels have become a nuisance, and the ground which they occupied has been needed for purposes of business. In fact, until forty years ago the carriage of surface and storm-water was regarded as the only function of sewers, and the use of them for any other purpose was discouraged and even positively forbidden by law. In St. Louis the ordinances passed, up to 1842, authorizing private parties to lay sewers in the streets for the drainage of their own property used to contain the proviso "that no privy be permitted to drain in the same." In London the restrictions in regard to connecting house drains with the sewers, which amounted almost to prohibition, were not removed until about 1844.

But with the general introduction of water service (including water-closets) into houses, which took place about this time, the amount of liquid waste was increased to such an extent that the use of the sewers to carry it off became a necessity, and was finally sanctioned by the the law. The removal of excretia and house-refuse by means of water, thus gradually established, has been found to be attended by such marked sanitary benefit that this is now regarded as the chief use of sewers, and their original purpose, as substitutes for the natural water-courses, is in danger of being forgotten. It is now maintained by some that the former practice should be inverted; that sewers should, as a rule, be built for house drainage only, the storm-water being excluded from them and allowed to run off on the surface, or, if necessary in rare cases, into a separate set of sewers built specially to receive it.

In support of this system of drainage it is argued that its adoption is attended with a great saving in expense. Sewers to carry house drainage only need not have a hundredth part of the capacity of those designed to carry off the water of storms, and it is, therefore, urged that by excluding the storm-water the cost of sewerage will be correspondingly reduced.

But in regard to this it may be remarked that the cost of sewers increases in a ratio much less than that of their capacity. A six-inch pipe sewer costs now in St. Louis about fifty cents per lineal foot, whilst one of six feet in diameter, with 144 times the capacity, costs but a little more than thirteen times as much, or less than $7 per foot.

But whatever the saving may be, it can be made only by dispensing entirely with sewers for storm-water, and this, as we have seen already, is not practicable in a large city or closely built town except at the cost of great sanitary detriment and inconvenience to business. If, besides the sewers for house drainage, we build also sewers for storm-water, we have a system of vastly increased complexity and much greater cost.

As a second argument for the small pipe sewers it is claimed that such a system can be kept cleaner and more thoroughly ventilated than one of large sewers, and is, therefore, in a sanitary point of view much safer. This claim, however, should not be accepted without many grains of allowance. For, as a matter of fact, it is quite possi-

ble to keep a system of large sewers clean, provided they are not improperly proportioned or badly built. The large sewers of St. Louis are, as a rule, free from sediment and as clean as a system of pipes.

But even if the sewers are not clean, the danger arising therefrom may be very easily exaggerated. The air of a large sewer is not always deadly. In fact, it is, in the vast majority of cases, not even dangerous, except it be taken in very concentrated doses, or breathed over and over in the continued atmosphere of a living room. The men who clean sewers, and whose business it is to spend many hours daily inside of them, have quite as good health as other ordinary laborers.

Whatever be the danger, however, from this source, it is one which it is very easy to ward off. By means of open-grated man-holes placed every 300 or 400 feet along the sewer the air which it contains may be so frequently changed and diluted as to be renderd wholly innocuous. If, besides this, the house-drains be provided with disconnecting traps, and with soil pipes open to the air at both ends, the danger from "sewer gas," as it is termed, is reduced practically to zero. And without these precautions small sewers are quite as dangerous as large ones. Indeed, Dr. Buchanan, Medical Inspector for the English Local Government Board, after a very careful study of an epidemic of enteric fever in Croydon, which is drained with small pipe sewers, states as well-established conclusions that noxious germs in small sewers produce a more intense poison than in large ones, and that the small sewers need more frequent *openings for ventilation*. (See report of medical officer of the privy council for the year 1875, pages 47 and 48.)

Still another argument for separating house-drainage from storm-water is that it very greatly simplifies all problems of sewage disposal.

In this it must be confessed there is great weight. Wherever sewage has to be got rid of by pumping or used for purposes of irrigation, it is very important that its volume should be kept as small as possible, and this is best accomplished by the complete exclusion of everything except the flow from dwellings and factories.

For the great majority of towns on the Mississippi river or its principal tributaries this consideration has, however, no force.

Cincinnati, Louisville, Kansas City, or St. Louis have only to pour their sewage into the great rivers in front of them to have it taken forever away and to all intents and purposes destroyed. But there are many other cities and towns situated on small streams which cannot receive sewage without pollution, or on bodies of water without current, or on grounds too low for sewer-drainage, where no such easy method of disposal can be adopted, and where the question of how to get rid of their sewage is one of great and ever-growing difficulty. For all these, whatever means of final disposal be adopted, the complete separation of house sewage from everything else is one of the first and most important steps. But with provision once made for the house-drainage there are many small towns and cities where for many years the storm-water can safely be allowed to pass off through the natural channels, though in time, as we have already seen, it will usually be found necessary to replace them with large sewers.

In conclusion, the whole matter may be summed up into the following propositions:

1. Sewers for storm-water are needed in closely-built towns, to take the place of the natural water-courses, which are obstructions to business and injurious to the public health.

2. Where the outfall of these sewers is into an ocean current or a stream large enough to be beyond danger of pollution, it is cheapest and best to use the storm-sewers for the reception of house drainage.

3. Where no such outfall can be obtained the best method is complete separation, so that the storm-water system shall receive no house sewage, and the house-drainage system no storm-water.

St. Louis, December 4, 1880.

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TENEMENT-HOUSE REFORM IN THE CITY OF NEW YORK.*

By JAMES GALLATIN, Esq., President of the Sanitary Reform Society of New York.

It is some forty years since the first tenement-house was erected in the city of New York. It would be a painful task, but one most interesting and instructive, to look back through these years, and study the causes that have given rise to the terrible evils of the tenement-house system, a system that has given name to a disease, "the tenement-house rot." But such an inquiry would fall outside of the boundary lines of this paper, which has been prepared for the purpose of placing upon record an account of the recent tenement-house reform movement and the results that have flowed from it. We may, however, glance for a moment back to the year 1864, when the Council of Hygiene of the Citizens' Association made a thorough sanitary inspection of the city, and in the following year published a very full and admirable report of the results of their labors. The startling disclosures of this report so aroused public opinion that a law was passed by the Legislature in 1866, creating a Metropolitan Board of Health with very extensive powers. Since that day the work of sanitary reform has been carried on with more or less success. The improvement in the healthfulness of the homes of the poor was, however, more brought about by the abatement of surrounding nuisances, such as fat-boiling establishments, slaughter-houses and the like, than by any radical improvements in the condition of the old houses or the construction of the new. In fact, nothing whatever was done to regulate the construction of new tenement-houses until August, 1878, just before the inauguration of the present reform movement. Want of space forbids our dwelling upon the work of the Board of Health during these years, a work, moreover, which is more or less familiar to all sanitarians from the perusal of the admirable series of annual reports. Suffice it to say that the very marked decrease in the death-rate is a sufficient witness to the wisdom of the laws and the faithfulness and ability of those upon whom have devolved their execution. We come now to the fall of 1878, when the Association for Improving the Condition of the Poor and the State Charities Aid Association, two well-known benevolent societies in the city of New York, under-

* Read before American Public Health Association, New Orleans, December 10, 1880.

took to make special investigations into the condition of the tenement-houses, and discovered a most distressing and alarming state of facts. At the same time the "Sanitary Engineer" offered premiums for the best designs for a tenement-house, to be built on an ordinary city lot, twenty-five feet in width by one hundred in depth. Plans and specifications to the number of one hundred and ninety were received, and after being examined by a committee appointed for the purpose, premiums were awarded to the successful contestants at a public meeting held at the Cooper Union. This proved to be a most valuable aid to the cause of reform, inasmuch as many skillful architects gave much attention to the subject of tenement-house construction, and thereby helped greatly to bring about intelligent legislation on the subject.

A meeting was held on February 4, 1879, at which over fifty of the clergy, besides a number of other gentlemen, were present to discuss and decide what practical steps were to be taken to meet the evils complained of. On Sunday morning, February 23, sermons were delivered in many of the churches in which tenement-house reform was urged upon the hearts and consciences of the congregations as a matter of religious duty. On the evening of the same day crowded meetings were held in two of the largest churches, which were addressed by many eminent clergymen, sanitarians and philanthropists. On the following Friday, February 28, a mass-meeting was held in the great hall of the Cooper Union, presided over by the mayor. The platform was occupied by many of the most influential citizens, and much interest was awakened among the crowded audience by the eloquent speeches of the distinguished gentlemen who addressed them. At this meeting the following resolution was adopted :

Resolved, That the mayor be requested to appoint a committee of nine for the purpose of devising measures to carry tenement-house reform into effect, such committee to have power to add to their number.

The committee at once organized by the election of the usual officers and the appointment of sub-committees, the principal ones being on legislation and on the formation of a building association.

The sub-committee on legislation at once put itself into communication with the commissioners of health, and proceeded to study the laws affecting tenement-houses, as they then stood, in order to ascertain in what respects they were defective, and what was wanting to render the health department more efficient. It was found that a "Tenement-house Act" had been passed in 1867, under the provisions of which the Board of Health had been able to accomplish many valuable results, but it seemed to be defective in the following particulars, which defects were cured by the amendments subsequently enacted :

1. In many cases where tenement-houses were to be erected it did not prevent the covering of the whole lot by the building. This was remedied by requiring that a clear open space of not less than ten feet should be left between the building and the rear line of the lot, and by authorizing the Board of Health to restrict the proportion of lot to be covered to 65 per centum whenever they deemed it advisable, except in the case of corner lots.

2. It did not secure a reasonable amount of light and ventilation to the inside rooms of new houses. The amended act requires that every sleeping-room "shall have at least one window, with a movable sash having an opening of not less than twelve square feet, admitting light and air directly from the public street or yard of the said house, unless sufficient light and ventilation shall be otherwise provided, in a manner and on a plan approved by the Board of Health." The board are now approving plans where the inside rooms open upon shafts of the following dimensions: For houses not more than three stories in height, twelve square feet; not more than four stories, sixteen square feet; not more than five stories, twenty square feet. These shafts, if properly constructed and properly used, supply perhaps as much light and air as it is practicable to compel landlords to provide for their tenants in a crowded city. It is my opinion that they should be arranged in such a way as to bring down fresh air and distribute it to the rooms that open upon them, instead of permitting the foul air to escape into them. This can be accomplished by using a double flue for the cooking stove to be found in each apartment; one section of the flue conveying the smoke, the other, owing to its being thoroughly heated, acting very efficiently as an exhaust ventilator. The air and light shaft should then, if built of brick, be left open at the top; if constructed of lath and plaster, be so covered over as not to prevent the admission of a full supply of air. This scheme seems to me to present the following advantages: It supplies the pure air to be found above the houses, instead of air tainted by dirty streets and close back yards, such as is admitted by the doors and windows of the lower floors; it checks the distribution of disease by seeking to prevent the admission of contaminated air to a shaft used in common by a number of families, and it utilizes for ventilating purposes to very great advantage the motive power of the large number of fires almost always in use in a tenement house. Of course various causes, such as changes in the temperature, in the direction and velocity of the wind, the presence of cross currents owing to the opening of windows in the front and back of the same floor, and the establishment of an up and down current at the same time in the shafts, may interfere with securing the best results, but I think that most of the time the system will prove satisfactory.

3. Nothing was said about overcrowding. The board are now authorized to require an owner to reduce the number of occupants of any tenement-house, that they consider to be overcrowded, until a minimum of 600 cubic feet of air space is secured to each tenant.

4. The amended law also permits the Board of Health to require the presence of a responsible person, either the owner or a janitor or housekeeper in every tenement-house occupied by more than ten families.

For a number of years the Board of Health had been very much assisted in their work by the co-operation of the sanitary company of police. In 1876, they were deprived of their services and the committee found that the department was much crippled in its usefulness thereby. A provision was incorporated into the new law which has secured to the board the services of thirty experienced police officers. The result of this has been that during the first year of its re-estab-

lishment the company has made over 150,000 inspections, and has produced a very marked change for the better in the tenement-house districts.

The law as originally introduced into the Legislature and passed by the Senate, provided that every tenement and lodging-house must be licensed and pay an annual fee of $3 on each house. It was thought that this would tend to give the Board of Health a more direct control over the sanitary condition of the houses, and would also furnish a considerable sum of money to enable them to greatly amplify their work. This section of the law failed to pass, but so far as it would have supplied increased means the end has been accomplished by the substitution of an amendment which establishes a " tenement-house fund " of $10,000 per annum, to be expended in the discretion of the Board of Health, and through the willing co-operation of the city authorities, who have supplied means to pay for the sanitary police and for certain additional inspectors and clerks that were thought necessary, so that the gross amount of additional moneys secured to the board has been almost exactly equal to that which would have been obtained from the license fee of $3 on each of the 21,163 tenement and lodging-houses in the city of New York.

At the end of March, the bill as approved by the health commissioners and adopted by the committee of nine, was introduced into the Legislature, and then followed two months of vexatious delays, owing to the vigorous opposition of many of the landlords through the agency of their representatives at Albany. The last days of the session drew near and it seemed as though all was lost; but the powerful aid of the New York press was invoked, and, under Divine Providence, it was owing to it that the bill was finally carried through both houses on the last day of the session, with but two votes against it in the House and one in the Senate. On the sixteenth of June, 1879, it was signed by the Governor, and a measure which was destined to ward off from many an humble home the dread presence of disease and death, became law.

We turn now to the labors of the other sub-committee, charged with the duty of bringing about the organization of a building association.

Subscription lists were circulated privately, and during the summer of 1879 the " Improved Dwellings Association " was incorporated under the laws of the State of New York, with a capital of $300,000. The following winter was spent in studying various plans sent in by a number of architects who had been invited to submit them to a committee appointed to examine them. In the spring of this year a piece of property was purchased, situated on Seventy-first and Seventy-second Streets and First Avenue, and in August the work was commenced. The buildings are in course of erection on a plot of ground 205 feet on the avenue and 200 feet on either street. The frontage on the avenue is to be occupied by a block six stories in height, designed somewhat on the English model, being only two rooms deep, with small extensions for the water works. There are to be five houses, the corner houses to accommodate three families on a floor, the inside houses two families on a floor. Each apartment will consist of a living room, two bed-rooms

and an extension containing a water-closet, wash-tub, sink and ash shoot. The first floor will be used for stores. The staircases will be fireproof, at the rear of the houses, and approached by a covered way running the whole length of the block, with entrances at both ends on Seventy-first and Seventy-second Streets. On each of these streets an opening is left of about thirteen feet immediately in the rear of the avenue buildings and over the entrance doors of the corridor, in order not to block up the rear windows, and also to admit air to the interior of the block. Back of this opening, on either street, is to be a house similar to those on the avenue, each floor to consist of one three-room apartment and one four-room apartment. This brings us about one hundred feet down the side streets and completes the structures on the avenue lots. So far the problem of how to build tenement-houses that should be healthful, and at the same time in an economical manner, was comparatively easy to solve, but when it comes to building on inside lots, where the advantage of corner lots was wanting, the difficulties became much greater. The following considerations will make this clear: Given a whole avenue frontage of eight lots of twenty-five feet in width and 100 feet in depth, a plot altogether of 200x100 feet, we have a total street frontage of 400 feet to furnish us with light and air; but the adjacent plot of the same size will have 100 feet on each street only, a total of but 200 feet, just one-half as much as the avenue front. If these side street houses were built only two rooms deep the amount of ground left uncovered would be so great that the rents would necessarily be forced up to a point far beyond the means of those for whose benefit they are designed. It was then absolutely necessary to build back on the rear of the side lots, and thus cause some of the families to live upon the yard. The problem then was to furnish these families with a sufficiency of light and air, and at the same time not allow their apartments to block up the windows of those living in front, and it was very happily solved in the following manner: Three houses, six stories high, are to be built on the hundred feet frontage of each side street, making each house about thirty-three feet wide, and then in the rear are to be placed three houses twenty-four feet wide. Each rear house is to be tied to its front neighbor by a narrow staircase well, thus in fact making one house of the pair. The front houses are to be contiguous, but the rear houses, being narrower, will not touch each other, but will afford a passage-way some nine feet in width, to furnish air and light to what would otherwise be inside rooms. A dumb-bell, with one ball smaller than the other, will convey some idea of the shape of the houses. Each floor of the front part will consist of two apartments, one of four rooms, the other of three, whilst the rear will provide two of two rooms each. Unlike the avenue houses, each family will not be supplied with separate plumbing arrangement, but only with a sink. Two water-closets, one for each two families, will be on each floor, adjacent to the staircase, and laundries will be arranged for the tenants to use in common. All the houses will contain lifts to elevate coal, etc. Great attention has been paid to the plumbing and drainage, a steam engine being used to fill cisterns on top of the houses in order to furnish an abundant supply of water, the scarcity of which in the tene-

ment houses of New York being one of the greatest evils that the poor have to suffer from. To sum up: There will be fifty-eight apartments of four rooms each, ninety-eight of three rooms, and sixty-two of two rooms, 218 in all, affording comfortable and healthful homes to nearly 1,000 persons. The first floor of the avenue houses will be rented as stores. The dividends are to be limited to five per cent., any surplus to be invested in additional buildings. The total cost of ground and houses will be about $240,000.

We must turn aside for a moment to note with pleasure the great success with which the work so admirably inaugurated and carried out in London by Miss Octavia Hill has been imitated in New York. Her plan, as you will doubtless recollect, consists in hiring from the owner various pieces of dilapidated tenement property, occupied by a very poor, miserable sort of people; and after thoroughly cleansing and repairing the premises they are then let to these same people, as far as possible, at a fair rental, the prompt payment of which is insisted upon, and the tenants are further expected to comply with a code of sanitary regulations. Miss Hill becomes personally acquainted with all the tenants, and the results of her firm but kindly treatment of them are most encouraging. In a very short time a marked change for the better is to be observed both in their morals and in their health, and those who but a few weeks before were looked upon as the dregs of society, are to be found living in a decent and respectable manner. Several ladies have undertaken this same class of work in New York, the one who has been engaged in it for the longest time having at present 173 families under her charge, in three different parts of the city.

The Association for Improving the Condition of the Poor has also undertaken to improve the sanitary condition of the tenement-houses by employing an inspector to look into any complaints that are made to the Association, and then seeking to remedy the evils, either by communicating with the landlord or else making a complaint to the Board of Health. A great many inspections have been made and much good work accomplished.

We will now return to the labors of the Committee of Nine.

After organizing the Building Association and securing the passage of a law designed to strengthen the hands and increase the efficiency of the Board of Health, the committee felt that their mission had been fulfilled and that nothing remained for them to do but to adjourn *sine die*. This they did on the twenty-ninth day of May, 1879, having been in existence just three months. Their final report concluded with the following words:

"We now leave the final issue with the public. But before disbanding they think it of primary importance that the interest now awakened in this subject should not be allowed to die out. They would recommend the immediate formation of a permanent organization of citizens to continue the work which they have begun, and to secure for that half of the population which is compelled to inhabit tenement-houses the fullest enjoyment of the rights to which they are entitled. The committee believe that by combining upon it representatives of the different religious and charitable bodies, with those who have become identified with this movement, a sufficient guaran-

tee will be given to the public for the effectual removal of abuses in the tenement-house system of New York."

In pursuance to the above recommendation, eight members of the Committee of Nine associated with themselves eight other gentlemen, and became the first Board of Directors of the "New York Sanitary Reform Society," incorporated under the laws of the State of New York on the third day of December, 1879. The following circular, issued in February, 1880, will explain the aims of the Society.

Extract from the certificate of incorporation of the New York Sanitary Reform Society:

The particular business and objects of the said Society are to aid in all proper and suitable ways in improving the sanitary condition of the city of New York, and especially of the tenement-houses and other dwellings of the poor therein, and to promote the removal of sources and causes of disease in the said city.

The Society proposes to carry out its objects by the following methods:

1. By calling on the Board of Health to abate all nuisances that may be brought to the notice of the Society.

2. By aiding the Board of Health in its efforts to secure as high a standard as possible in the construction of new tenement-houses.

3. By advocating a radical treatment of the "slums" and "fever nests" of the city, through the adoption of some plan which will insure their demolition and the erection of an improved class of dwellings.

4. By the publication and distribution of sanitary tracts, cards, etc., containing information in regard to ventilation, cleanliness, diet, the care of the sick and other similar matters.

5. By taking active steps to secure, when necessary, such legislation as may be required for the sanitary welfare of the city, and to counteract at all points the adverse influences of any organizations or persons who may try to evade or modify existing laws for their own advantage.

6. By doing all in their power to establish an efficient system of street cleaning, thus removing one of the most prolific sources of disease and death to which the tenement-house population is exposed.

It will be observed that whilst the efforts of the Committee of Nine were restricted to "tenement-house reform," the Society felt that it might with propriety occupy a much larger field of activity, and has undertaken to concern itself in all matters that affect the health of the inhabitants of the city of New York, both rich and poor alike, although fully recognizing the fact that its purely philanthropic labors for the welfare of the poor must still be its chief duty and pleasure.

Our attitude towards the members of the Board of Health, that we have endeavored to secure and maintain, has been, that while using every effort to furnish them with all the legislative and financial support that they require, and to stimulate an active public opinion to sustain them, to act at the same time as intelligent, fearless and impartial critics of their work.

Our efforts during the first year of our existence have been chiefly in connection with the new tenement houses. We have felt that nothing could be more important than the proper administration of

the laws affecting their construction. In addition to the regulations in regard to light and air above referred to, we are happy to say that the Board of Health have recently struck at the root of one of the greatest evils that our modern cities suffer from, by requiring, under the provisions of the tenement-house law, that hereafter the plumbing and drainage of all projected tenement-houses must be approved of by them. We propose making an earnest effort this winter to secure the passage of a law by virtue of which plans for the plumbing and drainage of all projected buildings, both public and private, must be submitted to the Board of Health for their approval, the same to remain on file at the Health Department for future reference. In order to secure the best results from this measure it will be necessary to establish a thorough system of inspection and to provide for the licensing of plumbers.

To those who contemplate the formation of volunteer sanitary associations, a few details of our system of organization may not prove unacceptable: Members must be elected by the executive committee, and pay an annaul due of not less than five dollars. These members elect, at the annual meeting, a board of sixteen directors, in whom the by-laws vest an absolute control over all the affairs of the Society. Most of this power is delegated by them to the executive committee, composed ex-officio of the five officers of the Society, namely, the president, vice-president, secretary, treasurer and counsel. This committee attends to all the details of the business of the Society, meet as often as they may see fit, and only call together the board of directors when it becomes necessary to decide upon some important matter of policy, such as the introduction of a bill into the legislature or the like.

Our experience has satisfied us that the utility of such a Society to the community in which it exists is very great. It serves as a connecting link between the health authorities on the one side and the citizens on the other. If the usefulness of the Board of Health is threatened by adverse legislation or by the officious meddling of selfish politicians, they have an organized body of influential citizens to turn to for support. And, on the other hand, such an association can educate and arouse public opinion far more effectively than can be expected of an official body.

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Model Health Ordinances.—"Every physician practicing in the village of New Brighton (Staten Island) shall make to the Board of Health a report of all the cases of such preventable diseases as the said board may require to be so reported, which may occur in his practice within said village. . . . . No pig stye shall be constructed or maintained within fifty feet of any dwelling-house in this village; and every pig stye, cow stable, or other place wherein any animal is confined, shall at all times be kept in a cleanly and inoffensive condition, and the bedding used therein be renewed as often as may be necessary in each case. Any violation of any of the provisions of this ordinance shall be punished by a fine of not less than five dollars ($5) nor more than twenty-five dollars ($25)."

MENU.

Scrambled XLCR Codfish.—Beat two eggs into one cup of milk; stir in half a cup of XLCR codfish, properly freshened; put into a buttered pan, and stir briskly while cooking. Cook to the consistency of scrambled eggs.

Filet de Bœuf Chateaubriand.—By Edward Mehl, *Chef de Cuisine*, Gilsey House. Take a large or double tenderloin steak and broil it; have some parisienne potatoes, sauté with butter, which you put around the dish. Have some good butter melted and a little parsley cut fine; add the juice of half a lemon, mix thoroughly and pour over your steak.

Stuffed Crabs, "a la Diable."—By Emile Combe, *Chef de Cuisine*, Hotel Wellington. Let your crabs cook twenty minutes. Take them out, and let them cool. Cut the crabs in two parts. Keep the shells, which you clean well. Take the meat out and hash it. You make a "Bechamel sauce," not too thick; add one onion hashed fine, and previously cooked in butter. You spice your sauce very strongly with salt, Cayenne pepper, mustard, spices, nutmeg, etc. Let your crabs cook in this sauce ten minutes. Then add some bread crumbs to the preparation to give it some consistency, and thicken with a few yolks of eggs.

Oyster Patties.—By Fernand Fère, *Chef de Cuisine*, Astor House. Take about one hundred fresh opened oysters; put them into a saucepan over a quick fire and let them boil, skimming well, of course. Then strain them dry, keeping the liquid in which you have boiled them. Take about three tablespoonfuls of fresh butter and the same quantity of flour; mix well; put over the fire and let it simmer until of a nice color. Then add the liquid in which you cooked the oysters, and about two pints of sweet cream. Season well with salt, pepper, a little nutmeg, and a very little Cayenne pepper. Then let it boil about twenty minutes; strain; add the oysters, and finish with a little butter. Remaining directions same as for chicken patties.

Asparagus Cooking.—A hint about boiling asparagus is worthy of mention, since the proper method is rarely followed. Asparagus of the stouter sort, always when of the "giant" variety, should be cut of exactly equal lengths, and boiled, standing ends upward, in a deep saucepan. Nearly two inches of the heads should be out of the water—the steam sufficing to cook them, as they form the tenderest part of the plant, while the hard stalky part is rendered soft and succulent by the longer boiling which this plant permits. Instead of the orthodox twenty minutes allotted to average asparagus lying horizontally, which half cooks the stalk and overcooks the head, diminishing its flavor and consistence, a period of thirty or forty minutes, on the plan recommended, will render fully a third more of the stalk delicious, while the head will be cooked by the steam alone.—*The Caterer.*

Editor's Table.

The Attention of Subscribers and Advertisers in Arrears is particularly invited to "*subscriptions payable in advance*—all bills subject to draft at sight, after thirty days," and requested to be prepared for the same.

The National Board of Health: Cui bono?—Our homœopathic contemporary, *The Medical Advance* for November, fails to discover any advantage to the country from the expenditures of the National Board of Health, while it felicitates itself on expected favors to come. "Now that President-elect Garfield is a staunch homœopath, we hope homœopathy will receive a fair portion of national patronage, such as appointments in regular service, favors from the National Board of Health, appropriations, etc."

That *The Medical Advance* should not have heard of, or should fail to appreciate the advantage to the whole population of the United States, and especially to the 25,000 rescued well persons in the depopulation of Memphis in 1879, and of the complete insulation and subsequent renovation of that city; of the institution of the inspection service at and in the vicinity of New Orleans, so effectual as to have stamped out the fever in that city, and to have effectually prevented the transportation or recurrence of a single case of fever on board any one of the hundreds of steamboats, barges and other vessels clearing therefrom; of the quarantine inspection service of the whole Atlantic and Gulf coast of the United States, the changes effected in the locations of the quarantines, and pecuniary aids appropriated greatly increasing their efficiency; of the work of the Havana Commission; of investigations and reports on the adulteration of foods and drugs; of investigations of atmospheric impurities; of investigations into the etiology of diphtheria and other infectious diseases now in progress: that *The Medical Advance* has not seen or heard of any advantage to the country on account of such labors, is probably because it is color-blind, or has looked through homœopathic spectacles only, which are not adapted to the examination of subjects recognizable without attenuation. To any intelligent and unprejudiced person who will examine the work of the National Board of Health in relation with an adequate appreciation of the pecuniary value of health and commerce, which the Board has so signally protected and promoted, it is safe to say that the expenditures of the Board have yielded more substantial benefit to the well-being

of the people of the United States than ten-fold the amount of its expenditures under any other appropriation of the Government.

Of the "appointments in regular service," by which we infer the Army, Naval and Marine Hospital services are meant, *The Advance* is equally at fault in the neglect of ordinary means of information, or it would have long since learned that those avenues for securing "a fair portion of national patronage" are equally open to all competent candidates, there being no recognized "party" or school, whatever —the ordeal being good health, good character and sufficient learning, not even an M.D. being required. But not so the National Board of Health, which consists of eleven members. Four are detailed from other offices equally accessible to homœopathists with other persons, and seven appointed by the President, by and with the advice and consent of the Senate; and one of these appointed members is a homœopath. Why he has not been more potential, or sufficiently so to satisfy our hopeful contemporary, there appears to be no reason except that which may be accounted for on homœopathic philosophy—the menstruum is too concentrated. There are in the United States about 100,000 physicians; of this number 6,000 only, on the evidence of the homœopathic bureau of statistics, are homœopathists. The proportion of homœopathic membership in the National Board of Health is therefore almost twice as large as it should be, and according to homœopathic doctrine the potentiality of this constituent would be increased by more attenuation—by enlarging the proportional representation of the non-homœopathic membership, the efficiency of the Board would thereby be increased.

The City of Pittsburgh Board of Health Report for 1879, pp. 100, and special appendix on water pollution, with diagrams and charts, shows abundant reason for the persistence of diphtheria and other filth diseases in that city for three years. The accumulation of garbage, offal, etc., throughout the city; slaughter houses in the midst of populous districts; the use of water from wells in proximity with cesspools; living over soil composed of filthy ashes, house-garbage and other domestic filth; filthy cellars, commonly damp, and frequently retaining sipage water from cesspools and privy-vaults, with no proper provision for surface drainage, and an exceedingly defective sewerage system; and withal, a water supply from a portion of the river, which is the receptacle of the filthy surface and privy-vault drainage of 45,000 people within fifty-five miles on the descending stream to the reservoir pumps—these are conditions everywhere fraught with danger to all who encounter them.

During the year 1879, there were 2,923 deaths, of which number

761, or nearly one-fourth, are attributed to causes commonly deemed preventable, comprehending: From diphtheria, 354; diarrhœal diseases, 285; scarlet fever, 95; typhoid fever, 91; whooping-cough, 62; measles, 54. Of diseases not classed as preventable, the chief were: Consumption, 251; other tubercular diseases, 126; acute lung diseases, 194; convulsions, 81; enteritis, 46; peritonitis, 25. Of the total mortality, 1,481 were of children under five years of age. Estimating the population at 150,000, the death-rate was 19.49 per 1,000.

For the three years 1877, '78 and '79, respectively, the deaths from diphtheria have been 401, 483 and 354; from typhoid fever, 71, 115, 91; from all causes, 3,408, 3,068, 2,923; and the per cent. of infectious diseases, 33.48, 31.46, 26.03. Favorable as the above figures appear, as indicating improvement, we learn from the appendix to the report before us that in the early part of the year 1880 there was such a signal increase in the number of cases of typhoid fever that it was declared an epidemic. During the three months ending with April, there had been 89 deaths certified as typhoid fever, typhoid pneumonia and typhoid dysentery, 80 of which were accepted as typhoid fever. Since that time we learn by the weekly reports of the Board of Health, there have been not less than twice as many more, and the end is not yet. Meanwhile other filth diseases prevail *pari passu*.

The report is rather heterogeneously put together, but it contains an immense amount of bad food for thought, enough evidence of criminal mortality against the civil authorities of Pittsburgh to hang them all for murder, if committed in some less loathsome way than water contamination with excrementitious filth.

The Analysis of Soaps.—As specially germane to the importance of pure soaps, and with particular reference to the brand known as "German Laundry Soap," manufactured by Mr. Charles S. Higgins, New York, we are gratified at being able to submit the following translation in abstract of a paper recently published, by the distinguished chemist, JUL. LOEWE, from *Zeitschrift für Analytische Chemi:*

For the determination of moisture the author takes from eight to ten grammes finely shaved and dries it, first at 60° to 70°; afterwards, at 100° to 108°. If it is supposed to contain caustic alkali, the process must be conducted in an atmosphere free from carbonic acid; or the free alkali may be determined before the process of drying by exposing a portion, shaved very fine and weighed, upon a watch-glass, in a cylinder filled with dry carbonic acid and closed, the proportion of caustic alkali being calculated from the increase of weight. The exposure must not last too long, in order to prevent the formation of bicarbonate. To determine free unsaponified fat, the

portion of dried soap is thrown into a rather high beaker capable of being well covered, and extracted with benzol or petroleum with the aid of heat, and decanted when clear into a small tared flask. If the decantation is difficult, it is passed through a weighed filter, which is afterwards used for the alcoholic solution of the soap. After two or three extractions the filtrates are collected and distilled, the residue dried at 108° in a chloride of sodium bath, and the increase of weight of the flask is noted, which shows the proportion of the non-saponified fat.

The residue freed from such fat is covered with about eight to ten parts of alcohol at 90° per cent., and heated to 40° to 50° in the water bath. Caustic alkali, and that in combination with fatty acids, along with glycerine, are readily dissolved, whilst soda (carbonate), farina, and mineral impurities remain undissolved, and after washing with hot alcohol and drying at 100° may be weighed. In the better class of soaps the residue does not exceed 1 to 1½ per cent.

A moderate stream of well washed carbonic acid is then allowed to play upon the surface of the warm alcoholic filtrate. Caustic alkali, if present, is deposited as alkaline carbonate. The beaker is covered, allowed to stand till clear, heated in the water bath, the contents filtered, and the filter is washed with warm alcohol. In the aqueous solution of the residue the carbonate of soda may be determined volumetrically.

The second alcoholic filtrate, thus freed from soda, is mixed with sulphuric acid diluted with alcohol as long as a turbidity is produced. When clear, the sulphate of soda deposited is filtered off, collected upon a weighed filter, washed with alcohol, dried at 110° and weighed. The weight shows the alkali which was in combination with the fatty acids.

The filtrate is acidulated with sulphuric acid, mixed with water, and freed from alcohol by evaporation in a platinum capsule. When cold, the acid aqueous extract, which may contain glycerine, is separated from the congealed fatty acids by filtration. These acids, as well as the glycerine, may de determined by known processes, the latter after the accompanying sulphuric acid has been saturated with farium carbonate.

The residue insoluble in alcohol after being weighed, is washed with cold water till the filtrate makes up exactly 60 c. c. The water is then driven out of the filter by means of alcohol, and the residue is dried at 100°.

After being weighed the residue is submitted to microscopic examination in order to detect starch. Mineral impurities are sought for by ordinary analytical methods.

Amblyopia or Failing of Eyesight from the abuse of tobacco and alcohol, a clinical paper, by Dr. David Webster, based upon cases in the practice of C. R. Agnew, M.D., and David Webster, M.D., reprinted from the *Medical Record*, a little pamphlet of twenty-four pages, is worthy of the widest possible distribution, and particularly commendable to all who conduct educational institutions, and other persons who would know and exercise the needful restraints against acquiring and indulging such dangerous habits.

Prevention of Venereal Diseases.—Dr. J. Birbeck Nevins, of Liverpool, one of the chief witnesses in the trial of the Contagious Disease Acts of Great Britain, has kindly sent us an abstract of the evidence before the Select Committee of the House of Commons, which we will begin the publication of in next number.

Dr. C. F. Folsom has been nominated and will doubtless be confirmed to fill a vacancy in the membership of the National Board of Health, caused by the resignation of Dr. H. J. Bowditch. Dr. Folsom's appointment will give eminent satisfaction to all persons interested in the prosperity of the Board.

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending January 15th, 1881.

Atlanta, Ga., 38,000: 14; 3; 21.2.
Baltimore, Md., 332,190: 134; 58; 21.—consumption, 27; acute lung diseases, 21; scarlet fever, 13; diphtheria and croup, 11.
Boston, Mass., 375,000: 174; 66; 25.0.—consumption, 25; acute lung diseases, 25; diphtheria and croup, 27.
Brooklyn, N. Y., 566,687: 274; 118; 25.3.—diphtheria and croup, 58; consumption, 26; acute lung diseases, 44; scarlet fever, 13.
Buffalo, N. Y., 155,000: 49; 16; 16.5.—consumption, 7; acute lung diseases, 5.
Cambridge, Mass., 52,800: 23; 7; 20.9.—acute lung diseases, 5.
Camden, N. J., 41,715: 19; 6; 23.7.—
Charleston, S. C., 57,000: 40; 13; 41.7.—consumption, 8; acute lung diseases, 8.
Chicago, Ill., 503,292:?
Cincinnati, O., 280,000: 111; 48; 23.6.—consumption. 15; acute lung diseases, 15.
Cleveland, O., 175,000:?
Dayton O., 39,000: 13; 4; 17.3.—
Dis. Columbia, 180,000: 82; 27; 23.7.—consumption, 17; acute lung diseases, 20.
Evansville, Ind., 30,000: 14; 6; 24.9.—
Fall River, Mass., 49,000: 22; 16; 23.4.—
Hudson Co., N. J., 209,000: 118; 31; 32.7.—consumption, 11; acute lung disease, 23; diphtheria and croup, 8.
Indianapolis, Ind., 75,350: 28; 8; 19.3.—consumption, 5; acute lung diseases, 3.
Lawrence, Mass., 39,000: 13; 2; 17.4.—
Louisville, Ky., 175,000: 43; 10; 18.1—consumption, 10; acute lung diseases, 3.
Lynn, Mass., 38,284: 12; 2; 16.3.—acute lung diseases, 5.
Memphis, Tenn., 34,000: 22; 7; 34.10.—acute lung diseases, 8.
Milwaukee, 115,761: 50; 21; 22.5.—consumption, 4; acute lung diseases, 10; croup and diphtheria, 6.
Mobile, Ala., 40,000: 26; 8; 43.4.—consumption, 6; acute lung diseases, 4.

Nashville, 43,543: 19; 9; 22.8.—acute lung diseases, 4.
Newark, N. J., 138,000: 73; 29; 27.9.—consumption, 16; acute lung diseases, 10; croup and diphtheria, 6.
New Haven, Conn., 62,882: 27; 4; 22.—consumption, 4; acute lung diseases, 5.
New Orleans, La., 216,359: 145; 41; 35.—consumption, 22; acute lung diseases, 26.
New York, 1,206,507: 719; ?; 30.4.—consumption, 103; acute lung diseases, 132; croup and diphtheria, 75; scarlet fever, 42; small pox, 9; puerperal diseases, 15; malarial fever, 10; typhoid fever, 7.
Omaha, Neb., 31,000: 13; 8; 22.2.—acute lung diseases, 5; croup, 2; consumption 2.
Peoria, Ill., 34,850: 5; 2; 8.9.—
Philadelphia, Pa., 846,980: 366; 110; 22.5.—consumption, 64; acute lung diseases, 46; small pox, 40; diphtheria and croup, 16; scarlet fever, 14; typhoid fever, 9.
Pittsburg, Pa., 156,649: 69; 34; 23.—consumption, 8; acute lung disease, 8; scarlet fever, 10; diphtheria and croup, 8; typhoid fever, 2.
Portland, Me., 34,000: 7; 2; 10.8.—
Providence, R. I., 104,862: 47; 14; 23.3.—consumption, 12; acute lung diseases, 9.
Richmond, Va., 65,000: 44; 13; 36.—acute lung diseases, 6.
Rochester, N. Y., 90,000: 24; 6; 13.9.—consumption, 6; acute lung diseases, 3; croup and diphtheria, 5.
St. Louis, Mo., 351,000: 136; 53; 20.2.—consumption, 22; acute lung diseases, 36; malarial fever, 3.
San Francisco, Cal., 233,400: 81; 24; 18.—consumption, 12; acute lung diseases, 10.
Springfield, Mass., 33,000: ?
Utica, N. Y., 34,500: 8; 2; 12.2—
Wilmington, Del., 44,000: 16; 7; 19.6.—consumption, 4.
Worcester, Mass., 58,295: 17; 10; 15.2.—acute lung diseases, 5; croup, 2; scarlet fever, 3.

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at date of latest weekly returns received:

Alexandria, Egypt, 220,000, Dec. 11, 160; 37.9.—
Amsterdam, Holland, 316,952, Dec. 18, 147; 22.6.—typhus fever, 3; other contagious, 4.
Antwerp, Belgium, 196,690, Dec. 4, 95; 28.5.—small pox, 11.
Barcelona, Spain, 249,106, Nov. 20, 143; 25.8.—typhus fever, 10.
Belfast, Ireland, 230,000, Dec. 18, 138; 34.—typhus fever, 8.
Berlin, Germany, 1,096,644, Jan. 1, 455; 21.8.—typhus fever, 8; other contagious, 65.
Birmingham, England, 343,676, Nov. 27, 143; 18.9.—
Bombay, India, 644,405, Nov. 30, 362; 27.3.—contagious diseases, 143.
Bremen, Germany, 109,000, Dec. 25, 42; 20.1—
Breslau, Germany, 276,000, Dec. 25, 147; 27.6.—contagious diseases, 18.

Bristol and Clifton, England, 213,500, Dec. 11, 98; 18.8—contagious diseases, 11.
Brussels, Belgium, 167,426, Dec. 11, 156; 20.9.—typhoid fever, 13.
Bucharest, Roumania, 177,646, Dec. 25, 115; 33.8.—small pox, 2; typhoid fever, 8.
Buda-Pesth, Hungary, 344,604, Dec. 18, 239; 36.—small pox, 10.
Calcutta, India, 429,535, Dec. 11, 327; 39.7.—cholera, 25; typhoid fever, 13.
Christiania, Norway, 116,081, Jan. 1, 36; 16.—
Copenhagen, Denmark, 235,254, Dec. 7, 95; 21.—typhoid fever, 3.
Dresden, Saxony, 220,216, Dec. 4, 99; 23.4.—typhoid fever, 3; contagious diseases, 15.
Dublin, Ireland, 314,666, Dec. 18, 156; 25.8.—typhus fever, 4; other contagious, 17.
Edinburgh, 197,593, Nov. 27, 99; 22.4.—
Genoa, Italy, 185,000, Jan. 8, 92; 25.7.—
Glasgow, Scotland, 491,844, Nov. 27, 285; 25.1.—diphtheria, 12; typhus fever, 10.
Havana, Cuba, 195,437, Jan. 8, 128; 34.1.—small pox, 13; typhoid fever, 3.
Lisbon, Portugal, 225,152, Dec. 4, 153; 35.3.—typhoid fever, 12.
Liverpool, England, 493,405, Jan. 8, 256; 24.3.—typhus fever, 4; other contagious, 28.
Lyons, France, 342,815, Dec. 25, 134; 20.3.—small pox, 5; other contagious, 7.
Madras, India, 397,552, Oct. 29, 299; 39.1.—small pox, 13; "fevers," 54.
Malaga, Spain, 115,882, Jan. 2, 86; 38.7.—small pox, 10.
Montreal, Canada, 135,000, Jan. 1, 54; 20.8.—typhoid fever, 5.
Munich, Germany, 209,000, Nov. 20, 133; 30.—croup, 9.
Paris, France, 1,988,806, Dec. 18, 1,031; 27.—small pox, 23; typhoid fever, 21.
Rio de Janeiro, Brazil, 330,000, Dec. 25, 190; 30.—typhoid fever, 4, yellow fever, 1.
Rome, Italy, 304,192, Dec. 4, 173; 29.6.—small pox, 17; other contagious, 14.
Stockholm, Sweden, 169,429, Dec. 25, 102; 31.4.—contagious diseases, 16.
St. Petersburg, Rus., 669,741, Jan. 8, 590; 45.8.—typhus and typhoid fevers, 58.
Trieste, Austria, 128,233, Dec. 19, 84; 34.2.—small pox, 3; typhoid fever, 3.
Turin, Italy, 212,644, Oct. 30, 70; 15.1.—
Venice, Italy, 141,017, Nov. 20, 57; 22.8.—
Warsaw, Rus. Poland, 357,169, Dec. 25, 122; 17.8.—

Secretaries of State Boards of Health.

ALABAMA.—T. A. Means, M.D., Montgomery.
CALIFORNIA.—F. W. Hatch, M.D., Sacramento.
COLORADO.—F. J. Bancroft., M.D., Denver.
CONNECTICUT.—C. W. Chamberlain, M.D., Hartford.
DELAWARE.—Wm. Marshall, M.D., Milford.
GEORGIA.—V. H. Taliaferro, M.D., Atlanta.

ILLINOIS.—John H. Rauch, M.D., Springfield, or Chicago.
IOWA.—?
KENTUCKY.—John J. Speed, M.D., Louisville.
LOUISIANA.—S. S. Herrick, M.D., New Orleans.
MARYLAND.—C. W. Chancellor, M.D., Baltimore.
MASSACHUSETTS.—Chas. F. Folsom, M.D., Boston.
MICHIGAN.—Henry B. Baker, M.D., Lansing.
MINNESOTA.—Charles N. Hewitt, M.D., Red Wing.
MISSISSIPPI.—Wirt Johnston, M.D., Jackson.
NEW JERSEY.—Ezra M. Hunt, M.D.. Metuchen.
NEW YORK.—Elisha Harris, M.D., Albany.
NORTH CAROLINA.—Thos. F. Wood, M.D., Wilmington.
RHODE ISLAND.—Chas. H. Fisher, M.D., Providence.
SOUTH CAROLINA.—Henry D. Fraser, M.D., Charleston.
TENNESSEE.—W. M. Clark, M.D., Nashville.
VIRGINIA.—? Richmond.
WISCONSIN.—J. T. Reeve, M.D., Appleton.

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Literature.

Thomas S. Kirkbride, M.D. (*not Kirkhide* as the types made us say in last number), is the author of the best work hitherto written on the Construction and Management of Hospitals for the Insane. J. B. Lippincott & Co., Philadelphia.

Minor Surgical Gynecology*; and—**Diagnosis and Treatment of Ear Diseases,**† are the concluding volumes of Wood's Library of Standard Medical Authors for 1880. Both of these works are strictly practical, giving the experiences of their authors, respectively, under extraordinary opportunities of personal observation in those phases of the diseases treated of which are most common, and which are most likely to occur in the practice of every busy practitioner. Both works are fully illustrated and gotten up in

*A Manual of Uterine Diagnosis and the lesser technicalities of Gynecological practice, for the use of the advanced student and general practitioner, by PAUL F. MUNDÉ, M D., Professor of Gynecology in Dartmouth Medical College; Obstetric Surgeon to the Maternity Hospital, New York; Physician for Diseases of Women to the Out-Door Department of Mt. Sinai Hospital, and late Assistant Surgeon to the New York Woman's Hospital; Fellow of the American Gynecological and the New York Obstetrical Societies; Corresponding Fellow of the Obstetrical Societies of Edinburgh and Philadelphia, and of the Gynecological Society of Boston. 8vo. pp. XI.-381. With 300 illustrations. New York: William Wood & Co.

†By Albert H. Buck, M.D., Aural Surgeon to New York Eye and Ear Infirmary; Instructor in Otology in the College of Physicians and Surgeons in the City of New York. 8vo. pp. VII-411. New York: William Wood & Co.

the same excellent style as the proceding volumes of the series, which, taken as a whole, are beyond comparison the most valuable series of books at the price, to be found in the English language. $15 the series.

Hand-Book of Urinary Analysis; Chemical and Microscopical,* is a conveniently arranged little manual, lacking only plates giving the microscopic appearances, to make it commendable to all students and busy practitioners. But as it is, it will be found to be a useful work-table companion. The author's extended experience as a systematic worker and teacher has enabled him to deduce a practical tabulated arrangement which will greatly facilitate examinations.

Pennsylvania Medical Society Transactions.—Thirtieth Annual Session, May, 1880, vol. XIII., part I., pp. 500.—This volume is prolific as usual of interesting practical reports and papers, consisting of seventeen special addresses, committee and departmental reports, and twenty-three county society reports. The address of the President, Dr. Andrew Nebinger, is chiefly devoted to the fashionable, but non-progressive subject—medical education. A recent report of the Surgeon-General, U. S. Army, that out of ninety-two candidates examined for the medical service, thirteen only were found qualified, is cited as evidence of the general insufficiency of instruction, while the diplomas of every one of the candidates were veritable certificates of their competency to enter upon the duties and assume the great responsibilities incident to the practice of medicine. (Another illustration of the same kind may be found in the notice of the Marine Hospital Service Report which follows.) Agitation of reform in medical education by the various State Medical Societies, Dr. Nebinger thinks, will be vastly more efficient in securing the reforms than all other instrumentalities combined. A report on Medical Legislation, by Dr. R. Lowry Sibbet, is a companion paper to Dr. Nebinger's, showing the extent of the illicit traffic in medical diplomas, and the necessity of more stringent laws for protecting the health of the people from both pretending and incompetent "doctors." The address on Hygiene, by Dr. Benjamin Lee, dwells especially upon the incompetency of plumbers, the dangers arising therefrom, and the necessity of competent inspecting officers of all plumbing work. Out of respect to some doctors and the few other people

*For the use of Physicians, Medical Students, and Clinical Assistants. By Frank M. Deems, M.D., Laboratory Instructor in the Medical Department of the University of New York; Member of the N. Y. County Medical Society; Member of the New York Microscopical Society, etc. 12mo., Limp Cloth, 25 cents. New York: Industrial Publication Co.

who have not sufficient intelligence to appreciate the dangers of sewer and cesspool gases, Dr. Lee cites a few strong cases. He could find enough to fill the whole 500 pages of this society report, as examples of various kinds of poisoning less commonly recognized, but equally certain as typhoid fever. He closes his excellent address with a form for a proposed legislative act, for the appointment of an inspector of plumbing and drainage for every corporate community in the State. Several of the county society reports contain instructive notices of diphtheria, typhoid fever and other filth diseases common to well-described local conditions. The leading stated addresses and papers are: Address on Obstetrics, by Dr. Jno. T. Carpenter; Clinical Observations on the Radical Treatment of Fibroid Tumors of the Womb, by Dr. William Goodell; Some New Remedies in the Local Treatment of Skin Diseases, by Dr. I. V. Shoemaker; Address on Surgery, by Dr. John H. Packard; Hyperdistension of the Air-Cells as a Therapeutic Measure, by Dr. J. Colis Cohen; Practical Remarks on the Treatment of Asthma, by Dr. William Pepper; Construction of Open Adjustable Appliance for the Treatment of Spinal Curvature and Disease, by Dr. E. H. Coover; Bromide of Ethyl as an Anæsthetic in Practical Surgery, by Dr. Jno. B. Roberts; Note on Alkaloids of Cinchona, by Dr. Benjamin Lee; Enumeration, Classification and Causation of Idiocy, by Dr. Isaac N. Karlin; Report of Operation for Removal of Submucous Fibroid of the Uterus, by Dr. S. T. Davis; Normal Axis of the Sole of the Foot, by Dr. Benjamin Lee; Some Points in the Consideration of Puerperal Septicæmia, by Dr. Wm. H. Parish; Committee Report on the Abuse of Medical Charities.

The Annual Report of the Surgeon-General of the Marine Hospital Service of the United States for the fiscal year 1880 shows continued progress in a most important field of sanitary labor. The most important measure urged by the Surgeon-General is the passage of a law requiring compulsory physical examination of all persons shipping in the merchant marine, demanded alike by the interests of American commerce and the dictates of humanity. Partial examinations for color-blindness have already been instituted to some extent, of pilots only; and of 2,870 examined up to June 30, sixty-four had been found color-blind—a small ratio, it is true, but quite large enough to require the examination of all. For, of the 50,000 pilots in the country, the same ratio would show over one thousand liable from physical defect to wreck a ship. Equally necessary is it that officers of every grade should be subjected to the same test. And, as urged by the Surgeon-General, physical examination should by no means be limited to sight. He shows that since 1873 14,468 persons have been treated for diseases which wholly incapaci-

tated them for seafaring pursuits, yet "a large proportion of those suffering from these diseases were again shipped on board American vessels by persons to whom the "blood money" of a helpless invalid or imbecile was quite as available as that obtained from a sound and healthy seaman. The charge of filling our ships with unsound and unseaworthy crews must, therefore, be laid at the door of the "blood money" payers and receivers....Nothing short of a compulsory examination, under proper legal restrictions, will afford a satisfactory remedy."

Statutory provision is also urged as a means of promoting the standard of qualification for entering the medical corps of the service —a bill for that purpose being already before the Committee on Commerce of the House of Representatives. Meanwhile, however, the examinations have been more exacting, and the standard of qualification correspondingly raised. At the last examination, 1880, the percentage of rejections to whole number examined was 82¼.

The number of patients treated during the year was 24,860, an increase of nearly 4,000 upon the previous year, and more than double the number treated in 1869. The *per capita* cost has been reduced to $16.18, the lowest yet reached, notwithstanding two new hospitals have been opened at a cost of $20,000.

The tabulation of statistics has also been considerably improved over previous reports; but there is still room for further improvement in this regard, by which one might see the aggregate ratios of diseases and deaths from zymotic and pulmonary diseases, at least, without the necessity of analyzing over sixty pages of figures.

As a whole, however, the report is a very gratifying one. The advances already made, the measures in progress, and the increasing *esprit de corps* all bear evidence of executive skill, and tend to give the service that high stand in public appreciation which it merits.

Louisiana State Medical Association Proceedings, 1880, pamphlet, pp. 111.—After the minutes usual to society proceedings, the report opens with the annual address of the president, J. W. Dupree, M.D., urgently appealing to the members, and to the profession throughout the State, for increased effort to place the Association upon a higher plane of professional progress. Preventive medicine is particularly urged as the branch of medical science which more than any other is full of promise for the future, and which above all demands the earnest attention of the profession in Louisiana.

Next follows an admirable oration by the Rev. Dr. Hugh Miller Thompson on the functions of the true physician and his status before the public. A forcible admonition from a worthy, and, regretfully be it said, exceptional standpoint, to physicians to hold

themselves aloof from the horde of Buchananites and their congeners, whose chief reliance for public favor is the certified benefit of clergy. "High character has been the record of the profession. . . It comes from no school; is certified on no parchment. It is written on the tablets of human hearts. Guard well your doors! Hold high your standard!" Would that Rev. Dr. Thompsons were more numerous, certificated doctors would be proportionally less.

Dr. Stanford E. Chaillé, chairman of Standing Committee on State Medicine, reported an encouraging degree of progress in securing State recognition and sundry acts of the legislature, defining the qualifications and regulating the duties of coroners, protecting the State from quackery, preventing adulteration of food, regulating the sanitary condition of public schools, regulating slaughter houses, etc., and other important measures before the legislature likely to become laws. Dr. S. S. Herrick made a brief report on public hygiene, urging the importance of popular instruction as the essential condition of progress. Dr. C. J. Bickham reported on Medical Education, summarizing the efforts of the Medical College, and American Medical Associations, and urging the "grading system, originated and first strongly urged in this country by Prof. N. S. Davis," as the best means of promise. In which he gives Professor Davis, deserving though he is, more credit than belongs to him, the University of Virginia having *instituted and practiced* the "grading system" before Professor Davis studied medicine. Dr. T. G. Richardson submitted a report on Hydrophobia giving a lucid sketch of the history of the disease, symptoms and treatment; and a tabulated summary of fifty-three accredited cases in Louisiana, most of them with a brief of treatment and results. The Conservative Influence of Disease, by Dr. A. B. Snell; Continuation of the Medical History of the Parish of Plaquemines, 1879, by Dr. R. Fox; Incised Wounds of the Abdomen, by Dr. R. H. Day; Use of Cold Water, and Especially of the Cold Douche, in Algid and Choleriform Pernicious Fever, by Dr. A. W. De Roaldes; Review of the Discussion on "Morbus Coxarius" at the International Congress, by Dr. M. Schuppert, all contribute to make a report of extensive interest, all the more, considering this is of the third annual meeting only of the Association, significant of competent workers in an abundant field of labor, of which the profession in general has a right to the benefit.

How Persons Afflicted with Bright's Disease ought to Live, by Joseph F. Edwards, M.D., is a very useful 12mo manual of eighty-seven pages, pointing out the first symptoms of Bright's disease, how they may be mitigated, and how, by the observance of plain hygienic rules in regard to diet, clothing, and exercise, and

abstinence from alcohol, tobacco, and other bad habits, persons afflicted with this disease may do much towards maintaining tolerable health, and prolonging life. Philadelphia: Presley Blakiston.

"Is Consumption Contagious?"* is the title of a 12mo book of 180 pages, comprehending a small part only of the literature of the subject of which it treats, contributing nothing new, and omitting much of more value; showing altogether a very superficial study of the subject.

European Modes of Living, or the Question of Apartment Houses, by S. G. Young, is an illustrated pamphlet of forty pages, giving a lucid description of the construction and appointments of French Flats of Paris; a sketch of the general style and arrangement of dwelling-houses in the chief European cities; and a general and well-merited criticism on the inconvenient and unsanitary arrangements of apartment houses in New York. We commend the pamphlet to all persons interested in the subject. New York: G. P. Putnam's Sons.

Publications Received.—Denison's Rocky Mountain Health Resorts—Houghton, Mifflin & Co.; Bosworth's Diseases of the Throat—Wm. Wood & Co; Capen's Spurzheim and Combe—Fowler and Wells.

MISCELLANY.

The Sanitarian.—"The best American publication devoted to hygiene."—*New York Herald.*

A recent subscriber writes for a whole set of back numbers, which he wishes to have bound himself, to include the advertising sheets, as the best category of sanitary appliances and remedies ever published; and suggests that in time to come the advertising pages of THE SANITARIAN will be referred to as an illustrated catalogue of the best means, mechanical and otherwise, of preventing disease and promoting health. Another new subscriber writes to know about some "liquid preparation of magnesia" which he was told THE SANITARIAN advertised, and complains that he can't find it in any of his numbers; he only don't go back far enough. We are sorry for both these correspondents and many others that no unbound numbers can be sup-

* "Is Consumption Contagious, and Can It be Transmitted by Means of Food?" By Herbert C. Clapp, A.M., M.D., Lecturer on Auscultation and Percussion in the Boston University School of Medicine; Physician to the Heart and Lungs Department of the College Dispensary; one of the Attending Physicians to the Massachusetts Homœopathic Hospital; Editor of the *New England Medical Gazette*, etc. Boston: Otis Clapp & Son. Price, $1.25.

plied further back than of volume four ; bound volumes only of first three years.

"**Phillips' Milk of Magnesia**" is among the many good things to be found in the advertising pages of back numbers, and it is doubtless the liquid preparation inquired after by our correspondent. It is still in the market, and likely so to continue, as preparations like it grow in public favor in proportion as they become known. It is an elegant and eligible proprietary preparation of magnesia, possessing in full the well-known properties of magnesia for sour stomach, sick headache and other forms of indigestion. **Phillips' Palatable Cod Liver Oil** is another remedy of the same kind as his magnesia—just what it pretends to be, so prepared as to be acceptable to the most delicate stomach—and its properties too well known to require description at our hands. Both these remedies are manufactured by C. H. Phillips, Manufacturing Chemist, New York, and can be obtained from any first-class apothecary. Of new things—recent additions to our advertising pages—attention is invited to—

Platt's Chlorides—the chlorides of the metallic salts of zinc, aluminum, lead, and calcium—are well known to be efficient disinfectants. "Platt's" are a great convenience, comprehending the salts so put up as to be always ready for use, and at a cost but little more than the crude salts, to use which would involve a wastage more than equal to the difference. In conjunction with cleansing, the more freely these chlorides are used in and about all apartments, and in the washing of all bedding and clothing occupied or used by persons affected with contagious diseases, the better ; and besides, they are at all times useful for destroying the disagreeable odors of water-closets, stables and barn yards.

The Portable Fountain Water-Closet is among the newest and best inventions of its kind, commendable not only for its convenience and tidiness, but especially for its adaptation to the fever wards of hospitals and to the care of all diseases which require speedy disinfection of the dejections.

Phosphites are well known as efficient tonics in a great variety of diseases ; attention is invited to those advertised by Dr. Crosby, and to Fellows' preparations.

L. Reich's Hungarian Wines we have had occasion to call attention to before. They are recommended by many of the most distinguished physicians in the United States as the purest and choicest wines imported ; and with many others who have had occasion to prescribe them for invalids, we believe them to be unequaled. They can be obtained from Mr. Reich only, as he declines the risk of adulteration by selling to the trade.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. IX. APRIL, 1881. No. 97.

PREVENTION OF DIPHTHERIA.

By EDWIN R. MAXSON, A.M., M.D., LL.D., of Syracuse, N. Y.

Since diphtheria originated in Egypt, near 2,500 years ago, where it prevailed, and in Asia Minor, 500 years, before extending further, and hence was first called *Egyptian* and then *Syriac disease*, the question as to its *prevention* has often been asked, but perhaps never quite satisfactorily answered.

And yet, when the facts are carefully examined, taking into account its *history, causes* and *pathology*, there is nothing strange connected with the inquiry. A glance, then, at the subject, in a general way, on this basis, may enable us to arrive at a rational conclusion as to its *prevention*, which should be of present and future benefit to the human family.

That diphtheria, a general putrid febrile affection, so nearly allied to the plague, an offshoot of which it very likely is, should have originated, as well as the plague itself, in Egypt, from putrid animal and vegetable emanations arising from the drying up of marshes or pools of water in the old cemeteries, after the yearly overflowing of the Nile, is precisely as might have been expected. And especially when we take into account the various imprudent habits prevalent among the Egyptians during the Assyrian and Ethiopic invasion and control of the country,* including numerous deviations from the laws of health and rules of propriety, many of which, with others added to the list, there and elsewhere, have been predisposing to the disease, and accounting for its spread and prevalence down to the present time.

For, though the poisonous effluvia arising from decaying animal and vegetable matters along the valley of the Nile may very likely have been the first cause of the disease, it should be remembered that the *poison*, or "bacteria," first operated upon constitutions that had been rendered imperfect, not only by their own imprudence, but

* Circa, from B. C. 672 to 600.

also by the indiscretions of their progenitors. And the degree of physical degeneracy thus produced, together with the effect of climate, etc., in different localities, constituted the difference of predisposition to the disease. And hence it was, no doubt, that diphtheria extended first into Asia Minor ; where, it is likely, that all the circumstances contributed to constitute the strongest predisposition, and especially the invasion and wars of the Persians.*

And the same holds true in relation to its extension, after 500 years, into the south of Europe ; many degradations connected with the decline of the Roman Empire, and especially the wars with the Northern barbarians, as well as the Crusades, etc., having contributed to its extension, during the subsequent 1,500 years, across the continent of Europe, the corruptions of the dark ages having contributed to increase the predisposition to the disease and its spread.

Thus we find that in this extension, prevailing mostly in garrisoned towns, it became epidemic in Holland in A. D. 1337, in Paris in 1596, and in America in 1771,† having since prevailed extensively in France, in 1818 and 1835, and in England and the United States, from 1856 to the present time. And, though the disease had originated in Egypt, no doubt, as stated, and had extended, like other contagious febrile affections, in the direction most predisposing, taking all the circumstances into account, diphtheria, like all other contagious diseases, and more than many of them, as often arises spontaneously, among the predisposed, from *putrid animal* and *vegetable* substances, so that contagion alone is by no means the sole cause of the disease.

And, while too much care cannot be taken to avoid exposure to the *contagion* of diphtheria, it is of as much importance, as a means of exterminating it, and of vastly more importance, as a direct prevention, to remove the physical predisposition and general exciting causes of the disease as they now prevail.

The causes of diphtheria, predisposing and exciting, besides contagion, may be regarded as embracing every possible deviation from the laws of health and rules of propriety, not only of the children, who are the more common victims of it, but also of their ancestors. For many children are hereditarily predisposed to this disease from the effects of diseased parents, the result of various imprudencies, as the use of tobacco, intoxicating drinks to excess, licentious habits, improper food, and irregular eating ; and, in short, every deviation of the parents, or their progenitors, from the proper rules of life, physical, intellectual and moral.

Many children also become predisposed to diphtheria by irregular feeding in infancy, improper clothing, such as short sleeves, short pants, etc., and irregularity in taking food, poisoned candies, and various unwholesome and indigestible articles of food and drink during childhood ; and later, improper food and unwholesome drinks, late suppers, tobacco, etc. All these and many other kindred improprieties are allowed by too many parents, tending to impair digestion, derange the circulation, and interrupt nutrition, leading to an enfeebled state of vital energy, and hence predisposing to diphtheria.

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* Circa, B. C. 560 to 546.

† Transactions Philosophical Society, Vol. I.

Now add to all these influences *contagion*, and the various exposures of children, to sewer gas, filthy, damp apartments, water-closets, and filth in back yards, around barns, and in the streets, as well as the too frequent use of impure water, and we are left to wonder that so many escape the disease at all, or that so many recover, having contracted the disease, as usually do.

Diphtheria is a general putrid contagious febrile affection, more nearly allied perhaps to the *Plague*, than any other disease, and whether originating in contagion, or from putrid animal and vegetable decaying matters, may have an incubation of a week or longer. Like small-pox, it may be produced by the inhalation of an impalpable effluvium, or by palpable matter; in the one case developing the general febrile state, before there is any local manifestation of the disease; while in the other, there is first a local disease, and then a general febrile state developed; and the *manner* of the introduction of the poison into the system appears to modify the disease, precisely as in the case of small-pox as contracted by the effluvium or inoculation.

The poison of diphtheria, whether from contagion or putrid exhalations, and however introduced into the system, dissolves, more or less, the blood, rendering it unfit to sustain the nervous system; thus undermining the various functions of the body, and the partially dissolved fibrin and albumen become a more or less putrid feebly organized fibrino-albuminous exudation membrane, on the surface of the fauces, larynx, trachea, bronchiæ, and sometimes on the lining membrane of the heart, arteries, veins and alimentary canal, one entire cast of which, measuring nearly a pint, having fallen under my observation in a boy that recovered.

Death may result from the mechanical effect of this membrane in the fauces, larynx, trachea, or bronchiæ, by interrupting respiration, hindering decarbonization of the blood, or it may occur from the direct depravity of the blood, failing to sustain vitality, or, again, by an exudation into or upon the brain and spinal cord or their membranes, producing mechanical pressure, and hence paralysis of the voluntary and often of the vital functions. Death may, however, occur from a combination of these various conditions, attended with general derangement before the suspension of the gastric, hepatic and renal functions, *uremic* poisoning sometimes suspending vitality.

Hence it is that all depressing influences, including every deviation from the laws of health, may not only predispose to this disease, but will, in every case, greatly increase the danger of a fatal termination when once contracted.

PREVENTION.—To prevent diphtheria, then, and so finally exterminate it, every man, woman and child, throughout our land and the world, should be brought to obey the laws of life and health.

Parents should regularly feed, properly clothe, and duly restrain all children, before they come to the years of understanding and accountability. This alone would do much. A late prominent physician of Paris estimated that 3,000 children had died in that city, during the thirty years of his practice there, from short sleeves, short pants, and other kindred imprudence in the dressing of children. And I am fully convinced that as large a proportion are sacrificed, in

towns at least, in this country, from the same cause—all for a *wicked* fashion. And from careful observation, in this country and abroad, I am confident that at least as many more are carried off by improper food, and irregularity in taking it; together with poisonous candies, and other unwholesome and indigestible trash, that no child or other person should eat.

Many of these, it is true, do not die of diphtheria. But it should be remembered that all this goes to predispose those not actually killed by depraving the blood, and lessening the powers of vital resistance. And hence, when exposed to the *contagion* of diphtheria, or to putrid animal and vegetable exhalations, they are the first to take and most liable to die of it.

Children on attaining the age of accountability, and all other persons, should take plain, nourishing and digestible food with strict regularity, and nothing between meals, or late at night. Trash, tobacco, intoxicating drinks, cosmetics, hair-dyes, dime novels, etc., should be avoided by all. And while the amount of clothing should not be in excess, care should be taken to keep the arms, legs and feet well protected, and all dress should be adapted to the season.

The person should be kept *clean*, without too much fretting of the skin by unnecessary washing, lest the urinary or other excretions should be called to the surface, thereby increasing personal filth, and injuriously deranging the various functions of the body. Sleeping rooms should be as far from the ground as possible; water should not be allowed in cellars, for a day even; and no decaying vegetables should be kept there.

Pure air should be allowed to pass into, and foul air out of, sleeping and all other rooms, without admitting dampness, or exposing the occupants to chilly night air more than can be helped.

No stagnant water should be allowed about a dwelling. And the back yards, where children play, should be kept exquisitely clean. Drains for sinks should be kept in order; and privy vaults should be cleaned out as often as twice a year, lime being thrown in at least once a week, and if convenient dry earth each day.

Heaps of filth should never be allowed about barns, or other outhouses. Hencoops, pig-sties, and rabbit's cages, if allowed, should be as far from the house as possible, and kept exquisitely clean; and no water should be used that could possibly contain decaying animal and vegetable matter.

Children should not be put to such kinds of labor as would expose them to injuries from filth, damp air, or other injurious influences. And adults should avoid such exposures as far as possible.

Now, as it was a deviation from all these rules of propriety which has predisposed to and kept up diphtheria, and all other kindred diseases, it is only by a return to these laws of health and rules of propriety, in every minute particular, that they are to be prevented and exterminated. And, while all this cannot be accomplished at once, very much can be done *now*, and more ultimately, by getting right in all these particulars. And public hygiene, carrying out these principles in ample drainage, supplying pure water, cleaning streets, and suppressing all nuisances, may aid greatly in this work. And when a generation shall have been raised up with such habits, and without

the hereditary predisposition to this and other kindred diseases, children not inheriting it, properly cared for by their parents, and obeying all the laws of life and health, may become in a great degree secure from the ravages of diphtheria, and hence of other putrid diseases. And as the body is the instrument of the mind, physical disease may not only be eradicated in the main, but the intellectual and moral powers of mankind will become proportionally elevated; and thus humanity may in a measure approximate Divinity, and become more nearly "allied to angels on the better side." Let us labor for this, then, as not only involving the *physical*, but also in an equal degree the *intellectual and moral well-being of mankind.*

No. 208 Madison Street, Syracuse, N. Y., Feb. 7th, 1881.

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Precocity a Sign of Inferiority.—M. D. Delaunay, in a communication to the French Société de Biologie, has advanced the opinion that precocity is a sign of biological inferiority. In support of his position, he adduces the fact that the lower species develop more rapidly, and are at the same time more precocious than those higher in the scale. Man is the longest of all in arriving at maturity; and the inferior races of men are more precocious than the superior, as is seen in the children of the Esquimaux, Negroes, Cochin-Chinese, Japanese, Arabs, etc., who are, up to a certain age, more vigorous and more intellectual than small Europeans. Precociousness becomes less and less in proportion to the advance made by any race in civilization—a fact which is illustrated by the lowering of the standard for recruits, which has been made necessary in France twice during the present century, by the decreasing rapidity of growth of the youth of the country. Women are more precocious than men, and in all domestic animals the female is formed sooner than the male. From eight to twelve years of age a girl gains one pound a year on a boy, and in mixed schools girls obtain the first places up to the age of twelve. The inferior tissues and organs develop before the higher ones, and the brain is the slowest of all organs to develop. M. Delaunay concludes his paper by stating that the precocity of organs and organisms is in an inverse ratio to the extent of their evolution.

THE CONTAGIOUS DISEASES ACTS OF GREAT BRITAIN.

To the Editor of the Sanitarian:—The report of the Committee of the American Public Health Association, on the prevention of Venereal Diseases, published in The Sanitarian for January, is so important as to call for a serious answer from those persons who are opposed to such legislative measures as have been adopted in Great Britain under the name of the Contagious Diseases Acts, to such administrative plans as have become known on the continent of Europe as the Police des Mœurs, or to such compulsory methods for checking the spread of these diseases as are recommended by the committee in their report.

All these several methods are alike in principle, and only differ in detail and in the sanction under which they are enforced. In England, the legislature has made them part of the law of the land, while on the continent of Europe they are almost exclusively enforced by municipal authority only, because, as continental advocates of this system acknowledge with one voice, if prostitutes are examined by the State authority and are allowed to be at liberty when healthy, but are placed in compulsory confinement when diseased, the State does give its acknowledgment that the calling is a lawful one, if it is only free from disease.

The essential principle of every system is the periodical examination of women, and their compulsory seclusion if diseased. The examination of men has been proposed over and over again, and has perforce been relinquished, even in such bodies of men as the British army and navy, where its enforcement would seem most easy; and in fact it has not been attempted among any community of men who are in the position of free citizens, although often recommended by advocates of the system.

Any such proposals as those made by the medical committee which has just reported are so utterly impracticable in the light of European experience of a hundred years' duration, that no one acquainted with the history of that experience would believe they could possibly be carried into effect among the free citizens of the United States; but as they have been put forward on the ground of the excessive prevalence of venereal diseases, and the probability of checking them by compulsory examination and committal to hospital, I beg your permission to show the result of experience in this country and in Europe, upon the two essential preliminary questions.

1st. What has been the actual sanitary result of such measures when they have been tried, and what is the consequent probability of their success if tried in America?

2d. Are the real amount and physical injury from these diseases so great as to be worth the price that will have to be paid for the assumed protection in subjecting every suspected man or woman, rich or poor, gentle or simple, to the authority of a mixed staff of medical men and policemen, who will be engaged in ransacking and practically making public the most secret and sacred relations of life throughout a large, free community?

The first question has really to be answered by statistics, upon which great scorn is cast in some parts of the "Report." But as the late British Government appointed a Select Committee of the House of Commons to inquire into the statistical results of the Contagious Diseases Acts in the British army and navy, in her colonies, and in other countries where such Acts have been in force, and as the present government has reappointed it, the value of statistical evidence is not likely to be disregarded by American legislatures and municipalities when they are called upon to act in the manner advised in the "Report." With your permission, I will, therefore, communicate an abstract of the evidence of the several witnesses examined before the committee, both in favor of the Acts and against them. Such statistics as will thus be placed before your readers have had the unusual advantage of the most severe cross-examination that a Select Committee of the House of Commons can subject them to, and they will, therefore, possess unusual weight.

The evidence in favor of the Acts was taken first, and only one witness has as yet been examined against them, and such as it is, I now forward it to you as the most unprejudiced reply that can be made to many portions of the "Report." I am, etc.,

I. Birkbeck Nevins, M.D., London,
One of the witnesses before the Select Committee.

ABSTRACT OF THE EVIDENCE BEFORE THE SELECT COMMITTEE OF THE HOUSE OF COMMONS ON THE CONTAGIOUS DISEASES (WOMEN) ACTS.

The controversy of the last few years on the sanitary and other aspects of the C. D. Acts has at length issued in the appointment by the government of a Select Committee, to inquire into the whole question. The inquiry is to be of the most extensive and exhaustive character, embracing the sanitary, social, and moral aspects of the question, not only in this country, but also in the countries on the continent where such a system as the C. D. Acts has long been in existence, and also in places under British dominion, like Hong Kong and some British colonies where it has been but recently introduced. Nine members of the House, who have hitherto been advocates of the Acts, have been placed upon it, viz.: Mr. Cavendish Bentinck, Col. Alexander, Viscount Creighton, General Shute, Mr. O'Shaugnessy, Sir Henry Holland, Mr. Kavanagh, Mr. Tremayne, and Mr. Massey. Five members who are opposed to them were also nominated, viz., Mr. Stansfeld, Sir Harcourt Johnstone, Mr. Shaw Le Fevre, Mr. Noel, and Mr. Burt, and Mr. Bulwer, who has not hitherto voted on the subject.

From this enumeration it appears that nine members of the committee have in past time been favorable to the Acts, five members have been opposed to them, and one member has not voted either for or against them in the House of Commons. But in connection with this composition of the committee, great weight will naturally be attached to the statement made by Mr. Massey at the first meeting of the committee. Mr. Massey was the chairman of the Royal Commission of 1870, and was the principal author of the "Report" on that occasion. He is, therefore, better acquainted with the subject than any other member of the committee, except Mr. Stansfeld, and he was naturally elected by the committee as their chairman. In opening the proceedings on the

first day, Mr. Massey made the following important statement, which will, no doubt, represent the feeling of other members of the committee as well as his own:

"I think it would not be at all profitable that I should enter into any of the statistics which were considered before the Royal Commission. We are now in a position to arrive at much better and more complete statistical information than the commission was eight years ago, and, so far from wishing to dwell upon those statistics now, I wish to reserve to myself personally complete freedom in modifying any opinions which I might have formed eight years ago, and under very much less information."

The witnesses who have been examined in favor of the Acts have been Sir William Muir, M.D., the Director-General of the Army Medical Department, whose evidence was chiefly devoted to the official statistics published year by year in the Army Medical Returns; Inspector-General Lawson, whose evidence was upon the sanitary effect of the Acts on the subjected and unsubjected stations; Dr. Barr, whose evidence related to the effect of the Acts upon the prostitutes of Aldershot. The sanitary evidence relating to the army as a whole having been exhausted by Sir William Muir and Mr. Lawson, the succeeding witnesses were army surgeons, who gave evidence as to the benefits derived by the individual regiments under their care, when they are removed from London (not under the Acts) to Windsor, which is under them. These witnesses were Surgeon-Major Robinson, M.D., of the Scots Fusilier Guards, and Mr. Myers, Surgeon of the Coldstream Guards. The last witness in favor of the Acts was Mr. Bond, Surgeon to the A Division of Metropolitan Police, whose evidence related to opinions rather than facts. The only witness thus far examined in opposition to the Acts was Dr. Nevins, the President of the National Medical Association for the Repeal of the Acts.

While strongly urging the importance of hospital accommodation for diseased prostitutes, and commending the benefit arising from it, the witness contended that "the Acts (*i. e.*, the periodical examinations) have certainly left them in a more dangerous condition than they found them, for, from Captain Harris's Report, the average ratio of disease is higher by something like 24 per cent. than it was in 1866, the first year that he reports when the Acts were in force; and from his reports also, the ratio of disease among the registered prostitutes has been gradually rising for many years." (607).

Venereal disease has been progressively rising for years in six of the largest stations, viz., Plymouth for 3 years; Portsmouth for 5 years; Greenwich for 7 years, and in Chatham, Aldershot and Colchester for 8 years (292).

Disease is now as high among the women as it was eight or ten years since; in Shorncliffe nearly as high as in 1869; in Woolwich higher than in 1871, and in Winchester nearly as high as in 1872 (292).

Disease has been uniformly higher for the last six years than it was in Maidstone since 1870, and in Southampton since 1872 (292).

Disease is practically unchanged in Canterbury and Sheerness and Deal (292).

Disease has fallen in only 3 out of the 17 districts—viz., in Windsor largely and in Dover and Gravesend (292).

In Aldershot the average yearly improvement before the Acts was 6.29 per cent., and afterward only 2.21 per cent; and in Woolwich it was 15.83 per cent. before the Acts, and only 7.12 per cent. afterwards (512).

The evidence of Dr. Barr before the Select Committee was, that the number of *registered* prostitutes was much reduced in Aldershot, and that those who remain associate now with an "almost incredible" number of men (twenty in a day or more), "thus spreading disease to an increased extent" (1609-13-14). Dr. Nevins informed the Committee, from Captain Harris's Reports, that the number of registered prostitutes who leave the subjected districts commenced with 180 in 1866, and increased until it reached the number of 1500 in a single year. Although the number of registered women is so much reduced, those who leave the subjected districts are still 900 a year (111), and many of them when diseased go into the unsubjected districts and spread disease there (112).

Previous to the passing of the Acts, the average length of time that a woman continued in prostitution was about four years (*Acton on Prostitution*), and there were very few women who continued as prostitutes to the age of 31 or upwards. Nearly all (86 per cent.) were under 26 years of age; only 14 per cent. being 26 or upwards, and only 3.8 per cent. being 31 or upwards. But at the present time, 46 per cent. instead of 14 per cent. are 26 years old or upwards, and the women of 31 and upwards are above five times as numerous as they were, being 20.6 per cent. instead of 3.8 per cent. The number between 21 and 26 years of age is almost unchanged; but the number under 21 is reduced from 53.5 per cent. to 20.6 per cent.

The result of registration and the Acts generally appears therefore to have been, that when once registered as prostitutes, women either find it so profitable as to continue voluntarily, or so difficult to escape that they remain prostitutes compulsorily until those above 26 have more than trebled, and those above 31 are over five times as numerous as formerly. The prostitutes are becoming a permanent "caste," instead of representing a large and fluctuating number of young women who, after "sowing *their* wild oats" for four years, escape from their unhappy position and become absorbed in the general population. (These figures are all taken from Captain Harris's Report for 1878.)

The amount cannot be ascertained, because it is clandestine. The experience of all other countries is, that in proportion to the severity of "regulations" the registered women diminish, and the clandestines increase, and that they are generally diseased and a source of great danger to health. Dr. Barr testified to the migration of women from Aldershot when diseased; but he was certain that clandestines had not increased in Aldershot—in spite of their being clandestine—and therefore unknown (1858). The question is one that does not admit of statistical accuracy.

PRELIMINARY STATEMENT BY THE CHAIRMAN.

"The objections urged by the opponents of the Acts may be stated as follows: 1. That the Acts are designed to provide sound prosti-

tutes for soldiers and sailors, and that this is implied in their title. 2. That such legislation, by rendering vicious indulgence less hazardous, has a direct tendency to promote immorality. 3. That the protected districts are, in fact, resorted to by libertines, and that married men and youths are induced to visit the registered women by the security they are supposed to offer of freedom from contagion. 4. That the practice of registering prostitutes and subjecting them to a periodical examination for the purpose of ascertaining whether they are in a fit condition to follow their trade, is in itself an outrage upon public decency and morality. 5. That such a system is virtually a recognition by the State of the trade of prostitution. 6. That the compulsory surgical examination of the women at stated intervals is calculated to remove any lingering sense of shame in the subjects of such operation, and to harden them. 7. That the increased gains of prostitution consequent upon the improved condition of the women offer a temptation to girls to enter upon this way of life. 8. That it is unfair to exempt men from the restraints and regulations to which women are subjected. 9. That the Acts are opposed to the principles of constitutional law."

"The experience of the operation of these Acts may now be said to have arrived at maturity; certainly at a state at which a competent opinion can be pronounced, whether they are efficacious or whether they are not, or whether they have a tendency to impair public morality or whether they have not."

EXPECTATION OF HYGIENIC BENEFITS TO BE DERIVED FROM THE ACTS.

"MR. STANSFELD: . . . As a matter of fact, I believe the expectations under which those Acts were passed were two—expectations which, if we want to understand this subject, we must absolutely sever in our minds; *one was the expectation of largely increasing the efficiency of the army, that is to say, of reducing the average number of men constantly in hospital from venereal disease;* that was the first expectation, and that has to be tested simply by figures. And with regard to that expectation, it does not matter whether the disease which confines men to the hospital is a constitutional disease or is not a constitutional disease; whilst they are in the hospital they are non-efficient. *The other expectation was that the system enacted by those Acts of Parliament would produce a serious and beneficial effect in largely reducing the amount of constitutional disease.* And it was felt and said that society was specially interested in the reduction of constitutional disease, because that disease would affect the innocent. It might affect the constitution of children yet unborn. The view undoubtedly when these Acts were passed, and which was expressed at the time before those various Committees and the Commission and in Parliament, was that the amount of constitutional syphilis would be largely and seriously affected and decreased."

"CHAIRMAN: I think that is a correct statement of the fact, and nothing but a well-founded expectation of that sort could, I imagine, justify, or does justify, so novel a mode of dealing with the subject. But our dealings with the subject in that way involved a very large invasion of personal liberty, and (which is, I think, of still more importance) it involved the possibility, by the misconduct or the non-

intelligence of the police, of inflicting pain and insult upon the unfortunate persons."

"MR. STANSFELD: I think it will have been evident to the Committee, from the statement of the Chairman, that both the Act of 1866 and the Act of 1869 are directed exclusively to the purpose of securing a periodical compulsory examination of women who are supposed to be prostitutes, for the purpose of ascertaining whether they are or are not, at the time of examination, free from disease, and of committing them to a hospital if they are found to be diseased, where they should be detained till they are cured. The Committee will have noted in the statement of the Chairman that there is really nothing else whatsoever in those Acts which either gives any power or imposes any duty, with regard to the preservation of order in the streets, or to the suppression of brothels, or to the prevention of juvenile or any other prostitution, or to the reclamation of prostitutes, and that whatever may have been done in those respects since the Acts were passed, has, therefore, not been done by virtue of these Acts.

"MR. KAVANAGH: If the Acts were repealed, would it require any other enactment to carry on that policy?"

"Mr. STANSFELD: It would require no other enactment, because whatever is done is done under other existing laws. I think it would be only fair to go a little further. The honorable member for Carlow has put a question to me—Could everything of that kind and all these moral results be equally well achieved without any further legislation if these Acts were repealed? and I have said, Yes, so far as their legislative power is concerned; but it is only fair to say that the other side of the question is this, that under these Acts you have the metropolitan police acting in all those various places, and not the local police, and that the metropolitan police have more power than the local police have, and, when acting under a sense of rivalry and their own good sense, it is believed that they can operate more efficiently than the local police: that is the other side of the question."

"MR. CAVENDISH BENTINCK: There is a third expectation, I believe, which was this: That a vast number of the very unfortunate women who were suffering from the terrible disease should be cured, and be enabled to lead better lives. That was an expectation which I myself, who was in the House of Commons at the time both Acts passed, entertained very hopefully. That a number of people who otherwise would drop to pieces from the worst form of disease should be humanely treated and cured. That is one very strong expectation on my own part."

"CHAIRMAN: The reclamation of the women was incidental to the Acts."

"MR. CAVENDISH BENTINCK: No, the curing of the women, who otherwise would have dropped to pieces."

"CHAIRMAN: Because they propagated disease. Not for their own sakes."

(To be continued.)

REMARKS UPON THE VENTILATION OF SHIPS.

Made at a Meeting of the Washington Branch of the U. S. Naval Institute, April 13, 1880, by THOMAS J. TURNER, A.M., M.D., Ph.D., Medical Director U. S. Navy.

(*From the Journal of the Proceedings of the Institute.*)

When it is proposed to consider the various methods proposed for the ventilation of ships, the forms of apparatus can be grouped for the purposes of study under three classes:

1st. Those that take the air out, or act on the vacuum principle;

2d. Those that force the air in, acting on the plenum principle; and

3d. A class composed of a mixture in varying degrees of the first and second classes. These are here considered in the opinion of your chairman to be grouped in the order of their frequency, usefulness and efficiency.

It is not proposed to consider at this time the necessity that exists for pure air on ship-board—air at least of the purity of that on the spar deck—nor to show by scientific mathematical demonstration the quantity required by the individual or demanded of masses of men, considering the surroundings when in enclosed spaces, nor to demonstrate to you from statistics the disease-producing influence of impure air; for it is known to all that the necessity for pure air is the constant iteration of every sanitary observer. Very slow has been the progress in the direction of practical application of the means for securing proper ventilation below the spar deck, although, as I shall show, the appliances proposed are numerous.

Of the first class of apparatus those that take the air out of a vessel are the most numerous as well as the most efficient. The removal of a volume of foul air is followed immediately by a volume of fresh air, impelled by the *vis-a-teyo* of the air, almost always a *constant*, dependent, of course, upon barometric pressure.

It follows in this method that the mean change from a static (*i. e.*, the air below deck) to a dynamic (*i. e.*, the external air) condition makes the static head almost a dynamic one, and so merges this class into the second, or that class of apparatus which forces the air into a vessel.

This class has always a *vis-a-fronte* element to deal with, which will vary, according to circumstances, from a zero of resistance until even P (pressure) will = R (resistance) and the ventilation = 0.

These remarks are applicable to air circulating in tubes. The element of friction of the air in conduits has not here been considered. Those who are interested in such subjects are referred to the work of Peclét.

Of the third class there are too few, and reference will be made to them hereafter.

Under the first class are to be grouped exhaust fans, bellows, tubular and the automatic systems.

Under the second class the means used are, windsails, cowls, shafts,* etc.

And under the third class are to be placed the various fans, reversible in action so as to act on either the vacuum or plenum principle, air-ports, etc.

I may here make the statement that the presence of a hatch does not exert much influence in an apartment otherwise closed.

Under such conditions there is about as much ventilation as in an uncorked bottle, for it has been stated by an eminent scientific ship builder that "the influence of an ordinary hatch to an otherwise closed hold is not felt much beyond a radius of eleven feet."

To those members of the Institute desiring to pursue the subject I respectfully offer this short résumé of authorities who have proposed methods for ship ventilation, or adopted suggestions of others having direct bearing upon this matter:

Agricola — "De Re Metallica" — published in 1556, describes a mechanical apparatus for ventilating mines by injecting air with a rotatory fan, and also a bellows, thus anticipating Desagulier, Commodores Beaumont, Barron, and Brindejonc's apparatus for ships.

In 1711 Henning Calvör described a pump anticipating Halls' ship's lungs.

In 1664 Dr. Henshaw, in his book called "Ærochalinos," published in Dublin, adopted one of Boyle's speculations, using a bellows to pump air in or out of a room. This was an anticipation of Commodore Barron's patent in 1835 for pumping the air out of a vessel by means of a smith's bellows.

In 1723 Desagulier invented his wheel; and in 1741 Hales invented his "Ship's lungs," which in some measure resembles the apparatus of Henshaw.

At this same date comes the persistent, undaunted brewer, Samuel Sutton, assisted by his friend, Dr. Mead, with his thermo-ventilating apparatus.

Sutton published an "Historical account of a new method of extracting air from ships," which, with slight alteration of dates, would almost apply to the present time. In 1741, also, Sir Martin Triewald, a Swedish engineer, invented a machine to draw bad air from under the decks of the Swedish ships blockading St. Petersburg, and in 1742 his method was adopted by the French. I have not been able to obtain a description of this apparatus.

Of the French inventors, Du Monceau, Wittig and Wazon have suggested thermo-ventilators. Damboise, Nouahier and Giffard propose cowls. De Cante (1870) suggests a method by compressed air. Of the others proposing means for securing the ventilation of vessels, I may mention Villiers, Kerauden, Brindejonc, Souchon, Simon, Desfaix, Peyre, Schiele and Williams, Reid (1844), Poiseuille (1846), Mondesir (1869) and Beaumanoir (1875).

To those already mentioned, of English inventors, must be added Boyle and Arnott, whose method, with variations, the principle remaining the same, has found its exponent in the hollow masts of the Spartan. Edmunds, 1865, by aspirating tubes; Dr. J. D. MacDonald, Prof.

* Dank's ventilating shafts, worked by a donkey engine, are endorsed as efficient means of ventilation in transport vessels by Sir Garnet J. Wolseley.

Naval Hygiene at Netley, Dr. Harry Leach, and the Napier system, as it is called, which was modified, in some particulars, in 1873, by passed assistant engineer G. W. Baird, U. S. N.

Our own countrymen have not been idle in this direction. Commodore Barron in 1835, McDonald, 1841, Knight, 1847, Emerson, 1848, Robinson, 1850 and 1854, Bulkley, 1850, Sexton and Ennis, 1851, Thompson, 1854, Bahr, 1855, Knecht, 1856-'58, Covel, 1864, Burnett, Wells and Woodward, in 1865, Wheeler, 1867, Vanderbilt, 1869, Sampson, 1871, A. W. Thompson and Thomas, 1873, Jones, 1876, Keating and Yarrow in 1878, nor must I omit the apparatus of Sir J. Liston Foulis in 1879, nor the cowl of Dr. Owens, U. S. N., nor Dr. Gibbs', U. S. N., modified wind-sail.

Of the automatic variety of apparatus I may mention those of Thiers and Roddy, 1871-'77, Delano, U. S. N., 1878, and Norton, 1879.

Of the inventors of modified air ports there must be noticed Sinclair, 1864, Fernald, U. S. N., 1877, Wilson, U. S. N., 1879.

It is said that chief engineer J. W. King proposed a plan for ventilating vessels in 1859, and chief engineer Isherwood has reported (1879) upon a plan proposed by D. C. Green, Esq., of N. Y.

As to the system of mechanical ventilation in the vessels of the monitor variety, it is too well known to demand more than this recognition.

The tendency at the present time is almost entirely towards the methods of the first class—extracting the air from the vessel, and in the course of some observation and a good deal more study, I give my adhesion, under the usual reservations upon scientific matters, to those methods.

One more statement in conclusion. To-day I have reason to know that two of our vessels are well ventilated—the Richmond and Lancaster. Of my share in this advance it does not become me to speak. I have the satisfaction, however, of knowing that there has been secured to some of my mess and ship-mates, and I trust in the future will be secured to all my fellow-officers, the extinction of the remembrance of the foul and "stuffy" atmosphere of a berth deck by a liberal supply of pure air. One side of the naval sanitary triangle has been drawn—ventilation—the other two, cleanliness and dryness, must soon be limned. When completed, health and its attendent comfort, as elements of an increased efficiency, are secure.

Ocean Travel in 1880.—Some idea of the wonderful proportions to which ocean traveling attained last year may be formed from the vast numbers of passengers carried across the Atlantic by the Commodore steamers, the largest and quickest of the four undermentioned lines. The figures, which reach a grand total of 32,738, are as follows:

Steamer.	Line.	Round Trips.	Passengers Arrived.
City of Berlin	Inman	19	11,552
Britannic	White Star	17	8,707
Arizona	Guion	20	7,579
Gallia	Cunard	18	4,900
Total			32,738

SANITATION AND EDUCATION.*

By Hon. John Eaton, LL.D., U. S. Commissioner of Education, Washington, D. C.

According to the precepts of political economy, man and nature are the partners in the production of wealth. Nature contributes the raw material, but man discovers, manipulates and utilizes it, thus contributing a far greater element of value than nature. So far, therefore, as man's part is diminished by reducing the amount or efficiency of his activity, the result is correspondingly reduced.

The humane considerations in behalf of sanitation, as well as the beneficent results of sanitary efforts, should be steadily kept in view and a knowledge of both universally disseminated.

What a confession was that of the English war minister that their first army in the Crimean war was lost by unsanitary conditions, and the second saved by the application of sanitary science, returning from those death-stricken regions in better health than it had ever been in barracks at home!

French military and colonial sanitation has a similar illustration. In Algeria three sets of troops had been decimated and three sets of colonists swept away by disease, but by well-conducted sanitary work the conditions were altered and a seat of health established in that settlement, the birth-rate rising above the death-rate; children were robust and healthy, and the military force in as good condition as at home.

No less forcible are the illustrations brought from experience in connection with great epidemics. If it was true, as some have claimed, that the great fire of London was necessary to purify the city from the seeds of the great plague, modern sanitary applications have rendered such desolation no longer necessary. Prof. Zidekauer, consulting physician to the Emperor of Russia, comparing the treatment of the cholera in St. Petersburg during its ravages in 1836, 1848 and 1855 with that in 1866, affirms that in the first three attacks, from 47,000 to 50,000 were struck with the disease, of whom 50 per cent. died. In the epidemic of 1866 from 57,000 to 60,000 were affected with premonitory symptoms, but under the improved treatment of advanced sanitation, only about 5 per cent. died. All are familiar with the fact that even among more favored conditions of society there was, a century ago, an average life of thirty years' duration, while now the average length of life in like circumstances is fifty years. Boards of Health and sanitarians in our own country are, year by year, bringing about results which must fully vindicate the principles they advocate, as, for instance, the reported reduction of the death-rate in Michigan, the reduction of the death-rate of infants in New York City, the general control of typhoid fever and scarlet fever, the limitation of the yellow fever in the last year of its recent terrible prevalence, and the success of the quarantine of New York

* Read before American Public Health Association, New Orleans, December, 1880. Continued from p. 114 current series.

City, the story of which reads like a romance. Nor should we forget manifold other results of their endeavors, such as the improvement in tenement-houses, in the drainage of soils and sites productive of consumption and malarial fevers, or the success with which they are enforcing upon architects the doctrine that, in the language of Bacon, "houses are built to live in, and not to look on, therefore let use be preferred before uniformity, except where both may be had." Not less should we forget what has been done for the regulation of abattoirs and of systems of water supply, drainage and sewage, of market inspection, and interference with the sale of adulterated and other unwholesome foods. It is to be hoped that by the aid of their sound sanitary counsels the people of Memphis, by their good sense in future municipal administration, may rejoice that their city shall be known as the city of health and not as the city of desolation.

Sanitarians may well consider what vast agencies for the promotion of health educational systems and institutions of education may be. Their purpose is to instruct and train every child in the land, not omitting any, whether blind, deaf and dumb, or feeble-minded, if not too weak to be instructed. A most intimate relation exists between sanitation and the administration of education. In boarding-schools the entire time and condition of the youth is under the teacher's direction, who should be too well informed to permit any fault. Rarely, however, does any considerable period elapse during which some one of these institutions is not invaded by disease, owing to sanitary neglect, or worse, to sanitary criminality, and the facts and their lessons are withheld from others lest the attendance in the future should be reduced. How terribly has one of our most excellent colleges been recently stricken, not because the president and faculty were not able and learned men, devoted to their work, or because they lacked skill in understanding all the conditions needful to the healthful culture of the promising young men committed to their care by trusting and devoted parents, but solely because the specific responsibility for the grounds and buildings did not enforce proper sanitary conditions.

Sanitary subjects should have a larger place in schools of medicine, engineering and architecture, that all possible may be done to advance the qualifications of experts, and to keep their art and science up to the very advance line of human acquisition. Dr. Bowditch affirmed in 1876, after a correspondence on public or private hygiene with sixty-two of our universities and colleges, exclusive of medical colleges, that (1) instruction in public hygiene and State preventive medicine is wofully neglected; (2) on private hygiene only about one-third of the colleges give any instruction; (3) a full special course of instruction on either of the above themes is almost unknown; (4) but incidentally, in connection with some other not necessarily allied subjects, the topics are treated by about three-fourths of the colleges, while one-fourth of them do not even perform this small duty in this most important matter. The attention given to the gymnasium and the physical condition of the students at Amherst by Prof. Hitchcock is hardly duplicated in this country.

Next to our medical schools, the universities and colleges for general culture should lead the educational advance in sanitation.

In England already the universities of Oxford, Cambridge and London are active. Much is expected of the new university of Victoria. Cambridge, not having the legal right to grant a diploma, gives a certificate testifying to competent knowledge of what is required for the duties of a medical officer of health. The examination precedent requires: (1) a knowledge of the principles of physics and chemistry, methods of analysis, the use of the microscope in ascertaining the condition of air and water, reference to ventilation, water supply, drainage, construction of dwellings, disposal of sewage and refuse, and (2) a knowledge of the laws relating to public health, sanitary statistics, origin, propagation, pathology and prevention of epidemic and infectious diseases, effects of overcrowding, vitiated air, impure water and bad or insufficient food, unhealthy occupations and the diseases to which they give rise, water supply and drainage in reference to health, nuisances and distribution of diseases.

This attention to sanitation in colleges, universities and professional schools should assure among our people of culture, in whatever profession or occupation, a fair measure of sanitary knowledge as had the learned classes in Judea and Egypt. But all this will be comparatively in vain without instrumentalities for the universal dissemination of its facts, precepts and benefits. Here especially does education enter into the most cordial relations with sanitation. Education alone has the men and women and instrumentalities by which this work of informing the people can be successfully and adequately prosecuted. Every parent may educate his child as he chooses. Institutions may be freely organized on private, or religious, or corporate bases, but in order that none of the people may in any sense perish from lack of knowledge, every State and Territory, except Alaska, where there is no law, has a school system with an executive officer at its head. Each State and Territory has a school code aiming to put a qualified teacher in every school, and, in control over teachers and schools, proper officers as directors, trustees or superintendent, are brought into relation with the executive head for the State. On these systems of instruction over $80,000,000 are annually expended. The corps of school officers has never been enumerated. The supervisory and inspecting work is generally compensated, but the great number of this vast army of school officers, generally choice men in their several places, do their work without pay. Rarely can an honest-minded man perform these duties and not find himself growing to do his very best for the precious youth affected by his administration, and, as a consequence, laying aside prejudice, unfounded notions and opinions not warranted in fact. He will not be indifferent to the conditions affecting health. It must be put down to the credit of these officers that they have given American children, as a rule, houses for schools not elsewhere excelled, and they have sought, steadily, improvement in school architecture and in the qualifications of teachers. But the public school officer may not merely promote instruction or promulgate rules that should render the conditions healthful; his responsibility is fully met only when such conditions are, beyond all question, in agreement with the principles of sanitation. In addition to this, he has the power to determine how far subjects of hygiene shall be taught

in the several departments and grades, and how far physical exercises promotive of health shall be introduced.

How often the young man or young woman comes through a particular course of training with the least possible knowledge of the simplest principles of hygiene as they apply to the person, the family, the school or community.

On the theory of the friends of universal education, there would be necessarily from one-fifth to one-third of the entire population under instruction at any given time during the school period. What a responsibility have school officers and teachers in the entire control of so much of the life during these formative years of our entire population. How sedulously should they consider the heating, lighting, and ventilation; in a word, all the influences of the schools, and the seats and desks of the pupils at work. It must be confessed that there are school officers who hold their places in comparative ignorance of the principles of either education or sanitation. As a result, many schoolhouses have been erected, and many teachers certificated without regard to fitness. Under their direction, houses have been built with public money that have no proper provision for air, either in amount or quality. They have allowed schools to receive and communicate diphtheria, scarlet fever, small-pox. They have permitted unhealthy conditions to multiply around schools, until from them has gone sickness to desolate neighborhoods.

They should be held responsible for all the unnecessary myopy, curved spines and infection due to their ignorant or negligent administration.

Right principles of pedagogics will accord with right principles of hygiene. School supervision, which has been taking on scientific form among us for the last fifty years, and has been worked with such incalculable effect to promote the universal instruction of our youth in intelligence and virtue, and the improvement of teachers, schoolhouses and methods, should be prepared and required to take special account of sanitation. Sometimes it may find essential the addition of the physician or sanitary engineer, or the woman trained in hygiene. As fast as science is admitted into the administration of human affairs, whether educational or sanitary, man's early life and school days will receive special attention. Diseases and other evils will be traced to their causes, and as far as ascertained to be affected by or affecting school life, will be corrected.

The Bureau of Hygiene of the city of Brussels, Belgium, has just sent out a bulletin on infantile hygiene, pointing out that most of the infants who die are the victims of ignorance, routine and prejudice. The office adds: "In order to diminish the considerable mortality which desolates and impoverishes at the same time the family and society, it is important to disseminate some elementary knowledge of infantile hygiene, so indispensable to mothers, whose solicitude must be relieved by the teachings of science and experience."

Recently a congress of school physicians was held in Berlin, endeavoring in its discussions to apply the principles of sanitation to the principles of pedagogics, and to determine how far the one should be modified by the other. The congress considered, first, whether it is best to cultivate mathematics and languages together or separately; second,

whether there should be afternoon sessions of school; third, how far pupils should participate in the work of their parents, what exercise should be taken after dinner, whether there should be any intellectual work after supper; fourth, what liberty should be given pupils in the selection of gymnastic exercises, and whether girls should use gymnastic exercises after ten; whether even the most talented and hearty pupils should be allowed to take particular lessons in addition to school work, and whether either the laws of health or of culture would permit pupils, during their school attendance, to participate in parties, balls, and like excitements.

In the recent International Educational Congress at Brussels, fifteen papers on hygiene in schools were presented by specialists from Belgium, France, Great Britain, Hungary, Holland, Russia and Switzerland. Still other papers were presented in substance. Long and earnest discussions followed, and certain declarations were made, as, for instance: (1) that class-rooms should be lighted on one side only, to the left of the scholars, and so arranged that all the seats should be fully and equally lighted; (2) that for lighting evening schools lamps were preferred; (3) that the size of a class-room for fifty pupils (the extreme number) should be about thirty feet by twenty-four and a half feet; that attention should be given to sanitation in school supervision and inspection.

In order to promote the statistical researches respecting the influence of schools on the physical development of children, they urged that the example of Belgium should be extended, and for this purpose advocated a system of international exchange of documents and information relating to scholastic hygiene.

With regard to Kindergarten and infant schools they considered the importance of preventive medicine and care and of attention to nourishment. They give utterance in reference to play-grounds, physical exercises, school fittings, and all that concerns the school that may affect the health of its pupils.

Indeed a very large number of investigators in this and other lands are now specially active in tracing all the relations of education to disease. We are shown how defective light or unsuitable positions may injure sight, how myopy increases with study. Dr. Cohn investigates the size of letters and their proper distance from the eye, and the proper distance of the printed page or the blackboard from the eye. Our attention is called to color-blindness. The students of insanity are making records of its prevention as well as its cure. The attempt is made to study scientifically the psychological development of mind from infancy to age in all conditions. Nor are these inquiries undertaken any too soon, in view of the new problems of life suggested by such facts in our modern civilization as the dying out of families and the increase of insanity.

A great step could be taken immediately by giving sanitation its proper position in our 200 normal schools, with their 1,400 instructors, their 41,000 students, sending out annually their thousands of professionally trained teachers. The influence of such an effort would be greatly increased by giving sanitary subjects proper consideration in the hundreds of teachers' associations and the thousands of teachers' institutes held throughout the land.

It may be here remarked for the credit of schoolmasters that before Boards of Health existed the American Institute of Instruction, in 1831, undertook to provide a plan for a village school-house, giving the proper number of cubic and square feet for each occupant and specifying proper means for ventilation. The next year they declared that among the most prominent defects in the schools of our country was the want of spacious and convenient school-houses. Horace Mann added to his first report on education a supplement, in which he discussed, with his usual vigor, school architecture.

The United States Bureau of Education, during the last ten years, has published articles, chiefly original, on the condition of medical education, past and present, on school-room diseases, on the relation of education to insanity, on the vital statistics of college graduates, on vital statistics derived from the Federal census reports from 1800 to 1860, on free rural sanitaria for the poor in summer and on vacation colonies for sickly school-children, by Drs. Nathan S. Davis, J. M. Toner, Edward Jarvis, Charles Warren and Prof. Virchow. The Bureau, in its annual reports, has always paid some attention to school hygiene; it has collected information respecting hospitals and Boards of Health, for which it has been thanked by the American Medical Association. It has always advocated the establishment and cordial support of State and city Boards of Health. It has published special pamphlets recently, respecting schools of nursing, schools of cookery and rural school architecture, and stands ready, now and hereafter, to aid, in every proper way, the direction of the public intelligence to the conservation and increase of public hygiene.

Bring up to a proper standard the information, the theory and practice of those who direct our public schools; advance the 300,000 teachers of the land to the full discharge of their duty, with respect to sanitation in the teaching and training of our youth, and they would create public sentiment that would leave no excuse for the shortcomings of sanitary experts, either in the breadth or accuracy of their researches and inferences, or the efficiency of their administration. There would be no longer a lack of a satisfactory system of registration of marriages, births and deaths in any State or Territory. Physicians would not fail to make sufficient record and report of diseases. The community would not fail for opportunities to know as accurately and fully as need be the usual or special causes operating to prevent disease, either mental or bodily. Business and professional men would be warned against the methods and business hours that hasten sickness or bring on decay and death. Apparatus and systems of heating, lighting and ventilating, so often fostering disease, would be banished from homes, churches, schools and places of pleasure or labor.

The dust, heat, effluvia, or other conditions so often destructive of life in certain mechanical industries, would be reduced to the minimum of evil, and all possible remedies applied. Gradually there would disappear alike from city and country those regions of filth, over the entrance to which all who approach might fitly read, as Dante read on the infernal gate, "all hope abandon, ye who enter here."

There would be sought out and removed those sources of disease that conceal themselves in cleanly appearance, but send out the fatal

diphtheria or fever. The communication of contagion by commerce or travel or social intercourse would be understood and prevented.

I need not pause to show intelligent religionists or moralists that, as sanitation is advanced by educational aids towards its proper position, their assaults on vice and crime will be enforced by arguments drawn from mental and physical health or disease.

"Sanitation points to the rum-shop and brothel as the place for the generation and dissemination of contagion. It shows that an ill-drained, overcrowded residence may generate disease and intensify tendencies to scrofula and phthisis," and, morally, adds Dr. Fraser, "modesty must be unknown, and decency out of the question."

The public mind in quarters is greatly agitated about the sphere and condition of woman. In all matters of health no one will question her equal interest with man. Not a few of her own sex in our country have become alarmed at the increase of various forms of nervousness and the multiplication of sickness. Here, therefore, is an unquestioned sphere for the exertions of woman. At the recent Sanitary Congress at Exeter, speaking of woman as a sanitary reformer, Dr. Richardson, felicitously citing Solomon's description of a good wife, "who worketh willingly with her hands," said: "She is an early riser, and sees that every one has an early breakfast. She knows that where there is poverty there can be neither health nor happiness. She is watchful and busy. 'She looketh well to the ways of her household, and eateth not the bread of idleness.'" He also called to his aid Xenophon's dialogue, treating of the household and its economies, in which Socrates and Critobulus are made to concur that the ordering of a household should properly be named a science, in which Socrates speaks of a certain man called the Good, who affirms that while performing his duties as a citizen he could safely be absent, for his wife, whom he had instructed, could order well enough what was wanted there. Dr. Richardson declares that sanitary science must have its true birth in the home. The man is abroad; disease threatens the home, and the woman is on the spot. He would give woman that training by which she shall be enabled to direct domestic life, that she may exert all her influence for the prevention of disease. He believes that this training is simple and practicable. She must be taught the laws of lighting, heating and ventilating the house; the nature and effect of food; the chemistry of the kitchen; the art of cookery. She must understand and resist those mistakes of marriage which promote disease; she must comprehend the child and its training; she must master domestic economy, and be an educated nurse.

Need I add that the proper, or, if you please, ideal union of education and sanitation would not be expected to annihilate pain, disease or death, but to reduce them to their minimum? The physician would practice preventive as well as curative medicine. His directions would be more intelligently followed, and his labor more cordially rewarded. The approach of a new or modified disease or great epidemics would be at once known and speedily antagonized by all the resources at the command of the nation, the state, the city, the family, the individual.

I close by asking you, eminent experts in sanitation, and you, in-

telligent citizens of this great mart, to which the waters of the Mississippi and its tributaries bring the vast trade of their broad and fertile valleys, if education and sanitation were so united as to increase continually the intelligence, the health and the safety of our communities, what could add so surely and so swiftly to the prosperity of every business in which you toil and the success of every object to which men aspire?

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THE PREVENTION OF CERTAIN CONTAGIOUS DISEASES BY LOCAL BOARDS OF HEALTH.*

By JAMES CRANE, M.D., Health Commissioner of Brooklyn, N. Y.

In our large cities a constant responsibility is imposed on our local health boards in respect of five of the diseases of the zymotic and typically preventable class, namely: Small-pox, measles, scarlet fever, diphtheria and whooping cough. It is true they vary somewhat as to their prevalence and virulence from year to year and from season to season, but they are never far distant from any populous community, and they are a constant charge upon the vigilance and energy of the sanitary officials.† For the sake of convenience, therefore, they may be spoken of as the five "constant" contagious affections.

Small-pox, for example, may be absent during an interval of two or more years (with the exception of cases that are from time to time directly imported from some infected locality), but its eventual recurrence may be confidently predicted if adequate measures of restriction be not systematically maintained. It is not necessary at this time to do more than mention the part that vaccination and re-vaccination play in the true prophylaxis of this disease, and we will simply add here, en passant, that it is our opinion that bovine lymph is the only virus that can with safety be employed by public authorities, since their aim must be the accomplishment of the greatest possible number of successes with the least possible risk of scandal, so surely to arise from any misadventure in this branch of public work. This, we believe, is best attained by the use of the bovine lymph.

With the exception of this special and highly important feature of civic preventive methods, that which will be presented in the following remarks applies with equal pertinence to each of the five constant contagious diseases. The suggestions herein given present concisely the line of operations at present pursued by the Department of Health of the city of Brooklyn—methods that have been gradually and in a tentative manner built up from the experience acquired year by year since 1866‡, when, for the first time under the Metropolitan Board of

*Read before the American Public Health Association New Orleans, Dec. 7th, 1880.

† Judging from the experience of Brooklyn, a city of 500,000 inhabitants will lose, from all causes, in a period of ten years, over 100,000 lives, of which number not less than twelve per cent. may be expected to die from these five diseases, or not far from 1,300 per annum.

‡ Prior to 1866, there were city ordinances requiring the reporting of "infectious, contagious and pestilential" diseases not specified by name, but commonly considered to apply to those occurring in times of pestilence.

Health, it was made obligatory upon physicians and others to make reports of cases of certain contagious diseases, specifying by name cholera, yellow fever, small-pox and typhus fevers.

The present methods have been in operation three years, the diseases now required to be certified being the same as those just named, with the addition of diphtheria (added in 1867); also typhoid, spotted and relapsing fevers; also in the early months of 1880, measles, having become unusually prevalent and fatal, was added to the list by a resolution of the board dated February 6th, 1880.

The order of the topics herein discussed follows that of the series of questions issued by the American Public Health Association in a circular dated September 14th, 1880, as follows:

A.—What are the best means of securing prompt and reliable information as to the presence and location of cases of such diseases?

B.—What are the best means of securing isolation of the first or of single cases of such diseases, and what are the chief difficulties in securing such isolation?

C.—Under what circumstances is it proper to declare such diseases epidemic in a place?

D.—Under what circumstances is it proper to recommend the closure of schools on account of the prevalence of such diseases?

E.—What precaution should be taken at the termination of each case as to—

a.—Care and disposal of the dead?

b.—Disinfection and cleansing of the room and house?

c.—Period of time at which it is safe to allow the convalescent to return to school or society?

A. Information concerning the contagious diseases is best obtained from physicians. The laws or ordinances should require that the reports of such cases shall be made within a reasonable time, say twenty-four hours—with penalty for failure. If the community will pay a moderate fee, the reports will be more surely made. If postal card blanks, directed to the health officer, stating the information desired, like the accompanying form:

"REPORT OF CONTAGIOUS DISEASE.

BROOKLYN.....188..

To the Board of Health, Brooklyn:

Name of patient.....; age.....
Residence.....; ward.....
Disease.....
Number of families in house.....
On what floor.....
Condition of premises.....
....., M.D.
Residence.....

TO PHYSICIANS.

Please make immediate report of each case.

All blanks in report must be filled.

Give both first and last name.

All children in the house named in this report are excluded from school attendance; therefore be sure the number of the house is correctly given.

Physicians will greatly aid the work of this office by attention to these details."

—are furnished to physicians with a request to the latter that they put their report in the nearest post-box, prompt and nearly complete returns would be made without any fee. I say "nearly complete," as there are physicians, otherwise reputable, who will not report their cases if they think they will not be discovered. The chief check or corrective against this rebellious tendency is found in the compulsory registration of causes of death, such as is secured in New York, Brooklyn, and a few other cities under the burial permit system. In Brooklyn, physicians are required to file their reports of death by contagious disease within twenty-four hours after death. If our postal arrangements might be so amended as to discriminate in favor of these communications affecting the life and health of the public, either by allowing the free passage of such as are marked "official" to the health offices, or by collecting unpaid postage on such at the time of delivery, the tax upon physicians would be lessened, and the reporting of contagious diseases facilitated.

There are, however, some cases not attended by physicians. The law should therefore also require reports from parents, keepers of boarding-houses, and from the principals of schools in cases where one of their pupils is attacked, or when children or teachers, though not themselves sick, attend such schools from houses where contagious diseases exist.

The success of this latter requirement must, in great measure, depend upon the good will of these persons, as without medical testimony the nature of the disease cannot be proven. When cases are reported by lay persons, they should, of course, be verified by a medical officer from the health office.

B.—Domestic isolation can rarely be depended upon, and for the following reasons:

1. The want of the proper apartments. The patient will frequently be one of a large family, having but two or three rooms, and having no means to obtain more.

2. The mother naturally becomes the nurse of the sick child, and from the demands of housekeeping as well, must be constantly going to and from the sick room.

3. A popular impression prevails that all children must have, at some time in their lives, certain of these contagious "children's diseases," as they are sometimes called, and the parents may conclude that while one child is sick the others may as well be, and the latter are therefore allowed to be exposed. This condition of things can only be met by educating parents as to the dangers of such diseases and their preventable nature.

The difficulties attending domestic isolation above referred to (first and second reasons) must be overcome by the establishment of contagious-disease hospitals in every city, making them so attractive and placing them under such guardians, that the people will have confidence in them, allowing mothers to go with their children, and their own physician to attend them. This must not be made a matter of compulsion, or it will fail; but by patient, continuous work such institutions will in time become popular, and be sought rather than

shunned, and then it may be obligatory to send thither all such cases as cannot be satisfactorily isolated at their homes.

C.—The official declaration of a disease as epidemic is a question of great importance. The consequence of such a step may become so serious that it should be taken only after a full and careful examination of the subject, and each incursion of the disease we are here considering, of extraordinary severity, should be judged on its own history, character and surroundings.

The Department of Health of Brooklyn has not found it necessary, during recent years, to make such declaration.

D.—Whenever the school-house is also the residence of a family in which there is contagious disease, the school should be closed. If in other cases, the patient is kept from school until neither he nor his clothes are in condition to spread the disease, and the other children living in the infected house are also kept away until such danger is past, there will rarely be any occasion for closing a school.

E.—At death the body should be at once disinfected, say by wrapping it in a sheet wet with a solution of sulphate of zinc and salt (as recommended by the National Board of Health) and placed in a tight coffin, metallic if possible, and at once closed and not again opened. The room and effects should be at once fumigated by burning sulphur for at least six hours, one pound to every 1,000 cubic feet. The funeral should take place within twenty-four hours, and no one attend except those who have been with the child during its illness. The fumigation should also be done in the same manner after recovery.

No definite period of time can be named when a child can with safety return to school; each case must be dealt with individually. In scarlet fever, so long as there is the least desquamation there is danger, and probably after all visible desquamation has ceased the process is still going on. It would, therefore, be well to consider the patient dangerous for a week at least after visible desquamation has ceased. In diphtheria, the difficulties are greater. A week should elapse between recovery—that is, return to normal temperature, absence of sore throat, etc.—before the patient is considered safe. The same rules will apply to small-pox and measles as to scarlet fever.

The method by which diphtheria and scarlet fever have been treated by the board was in 1880 applied to measles, this disease being by them considered as being far from a trivial one. And by direction of the Board of Health a pamphlet was published and circulated setting forth the suffering that may be inflicted upon a community by a severe type of this disease.*

CASES AND DEATHS BY MEASLES IN 1880.

	Cases.	Deaths.
January	190	9
February	527	15
March	782	32
April	492	34
May	292	32
June	210	21
July	31	6
August	5	3
September	5	0

* "Measles not a Trivial Disease: A Report on the Present Epidemic in Brooklyn, and Its Treatment by the Board of Health." By J. H. Raymond, M.D., Sanitary Superintendent. Reprint from the Proceedings of the Medical Society of the County of Kings. Brooklyn, N. Y., May, 1880.

RESULTS.

Respecting the results attained by this line of management it is yet too early to speak positively. We feel that good has been accomplished and that lives have been saved, more, perhaps, in respect of scarlet fever than diphtheria. The accompanying table is given for the purpose of showing that there has been a decided reduction in scarlet fever, and that this has taken place during a period when the influences that tend to increase its kindred affection, diphtheria, have been at work, and also that in the adjoining city of New York the scarlatinal activity has not diminished. Notwithstanding the rapid increase of this city's population in the ten years last past, the actual total mortality by scarlet fever for 1880 will probably be lower than in any year during that period.

Year.	BROOKLYN.				NEW YORK.	
	Scarlet Fever.		Diphtheria.		Scarlet Fever; Deaths.	Diphtheria; Deaths.
	Cases.	Deaths.	Cases.	Deaths.		
1874	2,448	479	1,651	580	879	1,665
1875	1,903	304	2,669	965	514	2,329
1876	1,608	352	2,339	812	891	1,750
1877	2,868	730	2,319	778	983	951
1878	1,994	363	1,750	544	1,099	1,007
1879	2,165	344	1,844	689	1,477	671
1880	1,658	222	3,014	1,118		

The following table shows that the plan adopted by the Brooklyn Board of Health is not an impracticable one. (For plan see report on the management of contagious diseases).* From an experience of more than two years we are satisfied that it can be carried into effect in every large town and city:

1879.—

Premises examined where contagious disease exist	3,032
Complaints against same for defective plumbing	764
Postal cards sent to school	1,428
Children from infected houses excluded from school	2,976
School permits issued	1,703
Children returned to school after premises fumigated	3,417
Places fumigated by board	1,016

Whooping cough is required to be reported, and upon these reports the children affected are excluded from school, as in the case of the disease above mentioned, and they require a permit from the board before they can again attend school.

The sanitary inspectors visit the houses from which the cases are reported and ascertain if other children are affected. If others are found they are in like manner kept away from school. This plan has been in force since May, 1880. In the six months from that time there have been sixty-eight deaths from whooping-cough, while in the corresponding period of 1879 the number of deaths was 108.

* "Progress in the Management of Contagious Diseases by the Brooklyn Board of Health." By J. H. Raymond, M.D., Sanitary Superintendent. Pamphlet reprint from Proceedings of the Medical Society of the County of Kings, May, 1879.

MENU.

XLCR Codfish Balls.—Take equal quantities of Geo. P. Trigg & Co.'s XLCR codfish and potatoes. Place the fish in coldwater, over the fire, until tender; then drain and chop very fine. After the potatoes are boiled, mash very smooth. Add the fish with a little milk, two beaten eggs and a large tablespoonful of butter. Beat all well together; season with pepper; make into balls and fry in hot lard. Vary the proportion of fish and potatoes to suit the taste.

Sweetbreads Larded.—Parboil five of the largest sweetbreads you can get. When half boiled lay them in cold water; prepare forcemeat of grated bread crumbs, lemon peel, butter, cayenne pepper and nutmeg, mixed together with the beaten yolk of egg. Cut open the sweetbreads and stuff them with it, tying them round with pack thread. Have ready some slips of fat bacon and lemon peel, cut in *very* thin and narrow strips. Lard the sweetbread with them in alternate rows of bacon and lemon peel, drawing them through it with larding needle. Do this regularly and handsomely. Then put them in the oven and let them brown. Serve with a sauce made of melted butter, a dessert-spoonful of browned flour and a gill of water, stirring all the time. Add salt, pepper, the beaten yolk of egg, and a glass of Madeira wine at the last.

Adulterated Coffee—How to Detect it.—Ground coffee affords a field for adulteration, and for this purpose chicory, carrots, caramel, date-seeds, etc., are the substances most commonly used. The beans have of late years been skillfully imitated, but as coffee is mostly purchased in the ground condition, the chief point for the consumer is to be able to form some idea as to the character of the latter article, and the following are a few simple and reliable tests:

Take a little of the coffee and press it between the fingers, or give it a squeeze in the paper in which it is bought; if genuine, it will *not* form a coherent mass, as coffee grains are hard and do not readily adhere to each other; but if the grains stick to each other and form a sort of "cake," we may be pretty sure of adulteration in the shape of chicory, for the grains of chicory are softer and more open, and adhere without difficulty when squeezed. Again, if we place a few grains in a saucer and moisten them with a little cold water, chicory will very quickly become soft like bread-crumbs, while coffee will take a long time to soften. A third test: take a wine-glass or a tumbler full of water and and gently drop a pinch of the ground coffee on the surface of the water without stirring or agitating; genuine coffee will float for some time, whilst chicory or any other soft root will soon sink; and chicory or caramel will cause a yellowish or brownish color to diffuse rapidly through the water, while pure coffee will give no sensible tint under such circumstances for a considerable length of time. "Coffee mixtures" or "coffee improvers" should be avoided. They seldom consist of anything but chicory and caramel.

"French coffee," so widely used at present, is generally ground coffee, the beans of which have been roasted with a certain amount of sugar, which, coating over the bean, has retained more of the original aroma than in ordinary coffee, but, this, of course, at the expense of the reduced percentage of coffee due to the presence of the caramel.

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending February 12th, 1881. **Abbreviations:** c, consumption; a l d, acute lung diseases; s f, scarlet fever; ms, measles; w c, whooping cough; d-c, diphtheria and croup; t f, typhoid and typhus fevers; s p, small pox; y f, yellow fever; ch, cholera; dl d, diarrhœal diseases; c d, contagious diseases.

Atlanta, Ga., 37,421: 10; 3; 13.8.—
Baltimore, Md., 332,190: 150; 51; 23.6.—c, 22; a l d, 14; d-c, 12.
Boston, Mass., 362,535: 177; 71; 25.5.—c, 34; a l d, 25; d-c, 20.
Brooklyn, N. Y., 566,689: 253; 105; 23.3.—d-c, 38; c, 28; a l d, 44.
Buffalo, N. Y., 155,137: 54; 22; 18.2.—a l d, 12.
Cambridge, Mass., 52,800: 17; 9; 16.7.—a l d, 6.
Camden, N. J., 41,658: 21; 6; 26.3.—a l d, 3; s f, 4.
Charleston, S. C., 49,990: 34; 6; 35.5.—c, 8; a l d, 2.
Chicago, Ill., 503,304: 218; 105; 22.6.—c, 24; a l d, 26; d-c, 28.
Cincinnati, O., 255,708: 109; 43; 22.2.—c, 17; a l d, 21; d-c, 3.
Cleveland, O., 160,140: 63; 0; 20.5.—c, 5; a l d, 6; d-c, 4; s f, 3.
Dayton, O., 38,677: 12; 3; 16.1.—a l d, 3.
Dis. Columbia, 180,000: 76; 22; 22.0.—c, 10; a l d, 22.
Evansville, Ind., 29,280: 12; 6; 20.4.—c, 2; a l d, 3.
Fall River, Mass, 49,000: 18; 7; 19.2.—a l d, 4.
Hudson Co., N. J., 187,950: 101; 36; 28.0.—c, 12; a l d, 19; d-c, 9.
Indianapolis, Ind., 75,074: 33; 12; 22.9.—c, 5; a l d, 4.
Lawrence, Mass., 39,178: 13; 6; 17.3.—c, 4.
Louisville, Ky., 123,625: 46; 11; 19.4.—c, 8; a l d, 5.
Lowell, Mass., 59,485; 32; 12; 28.1.—a l d, 8; c, 4.
Lynn, Mass., 38,284: 10; 5; 13.6.—d-c, 2; c, 1; a l d, 1.
Memphis, Tenn., 33,593: 20; 7; 31.2.—a l d, 7.
Milwaukee, 115,578: 44; 8; 19.7.—c, 5; a l d, 5.
Mobile, Ala., 31,205; 15; 6; 25.1.—
Nashville, 43,461: 11; 3; 13.2.—
Newark, N. J., 136,400: (Feb. 5) 66; 31; 25.2.—d-c, 5; a l d, 14.
New Haven, Conn., 62,882: 28; 6; 23.2.—c, 2; a l d, 6; d-c, 4.
New Orleans, La., 216,140: 118; 36; 28.5.—c, 21; a l d, 13; d-c, 5.
New York, 1,206,577: 709; 274; 30.6.—c, 99; a l d, 128; d-c, 57.
Omaha, Neb., 30,518: 5; 4; 8.6.—
Peoria, Ill., 34,850:
Philadelphia, Pa., 846,980: 407; 128; 25.1.—c, 67; a l d, 44; s f, 13.
Pittsburg, Pa., 156,381: 57; 26; 19.0.—c, 3; a l d, 10; d-c, 4; s f, 6.
Portland, Me., 33,810: 7; 1; 10.8.—c, 3.
Providence, R. I., 104,852.—37; 12; 18.4.—c, 7; a l d, 3; d-c, 3.
Richmond, Va., 63,803: 49; 24; 40.1.—c, 5; a l d, 5; w c, 3.
Rochester, N. Y., 89,363: ?
San Francisco, Cal., 233,956: 79; 22; 16.0.—c, 13; a l d, 11.
Savannah, Ga., 30,681: 16; 2; 27.2.—a l d, 3.
Springfield, Mass., 33,340: 6; 1; 9.4.—
St. Louis, Mo., 350,522: 150; 56; 22.3.—c, 20; a l d, 24.
Utica, N. Y., 33,913: 11; 2; 16.9.—c, 2.
Wilmington, Del., 42,499: 22; 9; 26.9.—c, 3; a l d, 4.
Worcester, Mass., 58,295: 20; 6; 17.9.—s f, 3.

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at latest weekly returns received.

Alexandria, Egypt, 220,000, Jan. 29, 147; 34.9.—
Amsterdam, Holland, 326,203, Feb. 5, 176; 28.1.—
Antwerp, Belgium, 173,643, Jan. 15, 90; 27.0.—s p, 4; t f, 4.
Barcelona, Spain, 260,000, Feb. 5, 133; 26.6.—a l d, 17.
Belfast, Ireland, 174,412, Feb. 12, 135; 40.2.—t f, 3; w c, 9; a l d, 44.
Berlin, Germany, 1,123,577, Feb. 5, 542; 26.5.—d-c, 25; a l d, 56.
Birmingham, England, 400,680, Feb. 12, 169; 22.0.—
Bombay, India, 644,405, Jan. 11, 383; 30.9.—y f, 14; a l d, 67, dl d, 20.
Bremen, Germany, 112,200, Jan. 26, 37; 17.7.—
Breslau, Germany, 273,000, Feb. 5, 56; 29.8.—a l d, 11.
Bristol and Clifton, England, 217,185, Feb. 12, 73; 17.5.—
Brussels, Belgium, 406,638, Feb. 12, 210; 26.9.—a l d, 28; c, 25; t f, 6.
Bucharest, Roumania, 200,000, Feb. 5, 107; 27.8.—a l d, 21.
Buda-Pesth, Hungary, 370,370, Feb. 5, 274; 38.5—s p, 12; a l d, 28.
Calcutta, India, 429,535, Dec. 25, 317; 38.9.—.
Christiania, Norway, 120,000, Feb. 5, 52; 22.5—a l d, 10; d-c, 6.
Copenhagen, Denmark, 235,254, Feb. 8, 139; 30.7.—a l d, 38.
Dresden, Saxony, 220,216, Feb. 5, 127; 30.0.—d-c, 7; a l d, 11.
Dublin, Ireland, 333,401, Feb. 12, 266; 41.5.—t f, 7; a l d, 90.
Edinburgh, 233,666, Feb. 12, 84; 18.7.—a l d, 20.
Genoa, Italy, 180,625, December, 395; 27.8.—a l d, 57; d-c, 30.
Glasgow, Scotland, 601,266, Feb. 12, 322; 27.8.—a l d, 121; d-c, 12.
Havana, Cuba, 195,437, Feb. 29, 117; 31.2.—s p, 13; t f, 3.
Lisbon, Portugal, 225,152, Dec. 18, 154; 35.6.—
Liverpool, England, 549,834, Feb. 12, 300; 28.5.—s f, 11; t f, 10.
Lyons, France, 342,815, Feb. 5, 193; 29.3.—s p, 14; a l d, 31.
Madras, India, 397,552, Oct. 29, 299; 39.1.—s p, 13; "fevers," 54.
Malaga, Spain, 115,882, Feb. 6, 53; 23.8.—s p, 3.
Montreal, Canada, 135,000, Jan. 15, 63; 24.3.—
Munich, Germany, 230,000, Feb. 5, 136; 30.7.—a l d, 14; d-c, 12; ms, 5.
Paris, France, 1,988,806, Feb. 10, 1,527; 32.9.—s p, 39; a l d, 165.
Rio de Janeiro, Brazil, 330,000, Jan. 15, 195; 30.8—s p, 4; c d, 8.
Rome, Italy, 305,469, Jan. 22, 155; 26.4.—t f, 7; d-c, 10; a l d, 11.
Stockholm, Sweden, 169,429, Jan. 22, 103; 32.8.—c d, 8.
St. Petersburg, Rus., 669,741, Jan. 29, 697; 54.1.—t f, 80; a l d, 97.
Trieste, Austria, 128,295, Feb. 5, 129; 52.3.—a l d, 32; c d, 5.
Turin, Italy, 236,658, Jan. 15, 152; 33.4.—a l d, 45; d-c, 16; t f, 5.
Venice, Italy, 141,615, Feb. 5, 99; 36.4.—a l d, 25; d-c, 3.
Warsaw, Rus. Poland, 357,169, Jan. 22, 167; 24.4.—

Augusta, Ga.—Dr. AZEL AMES, of Boston, the well-known physician and sanitarian, arrived in the city Tuesday evening. He comes by invitation of the Mayor and Board of Health, to give his views and present his plans of a combined system of drainage, storm water and soil dampness for the city of Augusta. The doctor will be in the city for some time, and will make a thorough examination and report. He is a most agreeable gentleman and eminent sanitarian, and possesses, to the fullest extent, the confidence of our city authorities. —*Augusta Chronicle, March* 3.

Editor's Table.

YELLOW FEVER.

*New Orleans is identified with a contemporary history of yellow fever almost, if not quite, from the time of its first settlement. At any rate from 1797, the date of its first recorded epidemic—when the number of inhabitants was only about 6,000—to the present time; and at no period more completely than that intervening between 1821 and 1878, inclusive, which covers the period of Louisiana's single-handed efforts to prevent the fever by an antiquated system of quarantine. Single-handed in a double sense: without other aid, and by quarantine exclusively—with no adequate effort to civic cleanliness or the purification of foul vessels. Considering these conditions in connection with the well-known history of yellow fever, it is not surprising that it has been of almost annual recurrence in New Orleans; and that many well educated and intelligent people there and elsewhere, who have not interested themselves in the progress of sanitation, and among them, some well advanced in the collateral branches of medicine, believe yellow fever to be so thoroughly domiciled there as to be beyond the control of preventive measures. According to the report of the State Board before us, for 1880, there were two deaths only from yellow fever, notwithstanding the widespread commotion and contention with the National Board of Health, the sanitary authorities of the Mississippi Valley States and Texas; and the President of the Board felicitates himself and the community on the general good health of the State, and relatively low mortality in the city of New Orleans—25.81 per 1,000 of population.

* Vital Statistics of New Orleans from 1769 to 1874, by Stanford E. Chaillé, A.M., M.D., *New Orleans Medical and Surgical Journal*, N. S. Vol. II.; Acts of Legislature of Louisiana, Establishing and Regulating Quarantine, by Joseph Jones, M.D., President of State Board of Health of Louisiana, 1880; Report of the Board of Health of State of Louisiana, 1880; Annual Address of Edward Fenner, Vice-President, with Remarks by Charles A. Whitney, President, Cyrus Bussey, Chairman of Executive Committee, and Albert Baldwin, Chairman of Finance Committee, of New Orleans Auxiliary Sanitary Association, Nov. 23d, 1880; Remarks by C. B. White, M.D., Sanitary Director, and Joseph Albrecht, Chemist of New Orleans Auxiliary Sanitary Association, on Disinfection; Reports by Drs. Geo. Sternberg, U. S. Army, J. Dickson Bruns and J. P. Davidson, on the "Fever which prevailed in Plaquemines Parish," 1880, *New Orleans Medical and Surgical Journal*, Oct., 1880; and Proceedings of New Orleans Medical and Surgical Association, Jan. 22d, 1881, *New Orleans Medical and Surgical Journal*, February, 1881.

The Board has been singularly energetic and fortunate in securing stringent health ordinances in regard to infectious diseases generally, and considering all the circumstances and the facilities which he claims, it is, to say the least, very unfortunate that the work of the Board has not been conducted in such a manner as to have maintained the confidence of communities in commercial relations with New Orleans. The want of this confidence has been a source of great anxiety to all persons concerned for the public health all over the country; and, unfortunately, the discussion of the "malarial fever" of Plaquemines Parish before the American Public Health Association in December, and the action of the Louisiana State Board of Health since that time, has had the effect of intensifying, rather than appeasing anxiety for the approaching annual danger of the revival, or the importation anew, of the same fever.

It is far from our purpose to be identified with either one of the contending parties about the nature of the fever which prevailed in Plaquemines Parish, to which the greater part of the report before us about it is devoted, but we think it important to represent the special points which signify its amenability to control, in case it should recur, whatever its nature.

The first case, according to the evidence of Dr. Sternberg, occurred about August 1, directly opposite the Quarantine Station, at which the yellow fever infected barque *Excelsior* was anchored from June 24 to July 5, and again from July 11 to August 16; and during the while, there were a number of other vessels from infected ports also anchored there. This case, within four or five days, was followed by six others, one and a half miles below; and these, on the evidence of Dr. Bruns, were followed by an epidemic, no longer confined to the lower coast, in the vicinity of the Quarantine Station, but extending along both banks of the river and *into* New Orleans—reckoned in all at upwards of 150 cases. Of these in the aggregate, Dr. Bemiss' final statement, published under date of October 9, that "from testimony furnished, that a hundred cases or more of fever have occurred on the lower coast, some of which were as undoubtedly yellow fever, as others were of a different character," is probably the most approximately accurate of any that has been, or is likely to be made public. A number died, and some of them with black vomit; but they seem not to have fallen within the limits of required certificates.

New Orleans is peculiarly and in some respects unfortunately situated, insomuch that her official efforts for the protection of the public health have hitherto been almost exclusively confined to quarantine. Few other cities have had more stringent quarantine

regulations or been more energetic in their application; and there is good reason to believe that the difference in the results of those efforts as compared with other places has been chiefly due to natural, and, until recently, in great part, deemed to be insurmountable causes. The quarantines of New York, Philadelphia, Boston and other northern seaports have been no more rigid, and, in the main, no better administered than in New Orleans. The difference has been that in the one case credit has been given to the administration, which of right belongs to climate and conditions of locality; while in the other, these have been the unquarantinable conditions. But in both alike, quarantine has been criminally inefficient in its selfish practices, by requiring the detention of infected vessels at the outer anchorages and there permitting them to be unladen, laden again, and permitted to depart, *when known to be infected and dangerous* to crews at all times, and to all ports accessible to them. Such practices have been, and still are, to a great extent, common to quarantines everywhere, but nowhere more common than to those above mentioned. But the danger of infected vessels is proportional somewhat to the climate and local conditions of the ports at which they arrive.

The late John H. Griscom, foremost of American sanitarians, aptly compared external and internal hygiene (quarantine and civic cleanliness) to the two blades of a pair of scissors—neither one was good for anything without the other. To no place in the world is this general truth more applicable than to New Orleans. A great commercial city of 216,359 inhabitants, in latitude 29° 58′ north, situated on and extending for eighteen miles along a receding river bank, lower than the level of the water in the river, and spreading back a mile into the margin of an extensive undrained swamp; occupying over 50,000 dwelling houses, warehouses and stores, for the most part built flat down upon, or sunk into the undrained saturated soil; and moreover, this soil loaded with the soakage of more than 40,000 privy vaults, excrement boxes, and other back yard filth. Surely, a commercial city thus situated is, to an exceptional degree, liable to dangerous consequences from the arrival of infected vessels whencesoever they come. And the danger under such circumstances bears little or no relation to the state of health of the persons on board at the time of arrival. The infected *vessel* is equally dangerous to such a place, whether disease exist on board at the time of arrival or not. The danger of an outbreak on board an infected vessel in the face of favorable local conditions, is well known to be greater pretty much in proportion to their extent. In illustration of this proposition, New Orleans has furnished numerous examples, the most recent one of which was that of the barque *Excelsior*, in July last:

"The barque *Excelsior*, Capt. J. L. Bjorkgren, sailed from London February 17, 1880, and arrived at Rio de Janeiro April 13; left Rio May 10, and arrived at the Mississippi Quarantine Station June 24, having been on the voyage about fifty-six days. Her crew consisted of three officers and nine seamen. . . It is worthy of note that neither at Rio nor at the Quarantine Station during a period of fifty-eight days, did any sickness occur on board the *Excelsior*, and the case of the seaman, James Kenney, was not developed until the vessel had been not exceeding sixty hours at her wharf in New Orleans." (President Jones' Report.)

But New Orleans is beset by still other dangerous conditions. Her chief quarantine station, seventy-five miles below the city, and forty-one miles from Eadsport, at the mouth of the river, is in the midst of a region of country lacking population only to make it every whit as liable to occasion an outbreak on the arrival of an infected vessel as New Orleans itself; and withal so lacking in facilities for isolation and police as to be literally devoid of the prime necessities of quarantine. Indeed, it is quite impossible to have an anchorage for infected vessels in the Mississippi River anywhere above the passes, so situated as to be out of danger to non-infected vessels in passing, and to the shore, even if it were possible—without a military force—to effectually police a squad of infected vessels strung along an easily accessible shore in communication with the city.

The Atchafalaya and Rigolets quarantine stations are also in the midst of vulnerable surroundings, with no facilities for effectual police, and in easy communication with the city; insomuch that, considering the local condition of New Orleans, the Louisiana quarantines, as they now are, and as they have been hitherto, the populations and commerce of the Mississippi River above New Orleans—considering all these conditions—it is clear to any unprejudiced mind, familiar with the subject, that the only quarantines of New Orleans, and all the region round about, which can be undertaken with any promise of benefit, are those which will intercept and cleanse all infected vessels and cargoes at well-appointed outposts. In short, considering the facilities of Ship Island—and other places which may be equipped *off* the coast—no infected vessel should be permitted to pass Eadsport at the mouth of the Mississippi River, or to enter the waters of any Gulf port. The effort of the Louisiana State Board of Health to make it appear that the burdens of commerce would be increased by the difference of a few miles greater distance from port in order to reach a place out of danger to the community, and promotive of ultimate dispatch to the vessel and cargo, is wholly inconsistent with the purpose of quarantine, and fraught with danger not only to the people of New Orleans, but to the whole Mississippi Valley. Equally far-fetched and misleading is the following illustration:

"Granting, for purposes of argument, that the Board of Health of the State of Louisiana had absolute jurisdiction over the waters of the Gulf of Mexico, to the exclusion of the rights of all States and nations; that it had control of Ship Island, which is the property of the State of Mississippi, and also of the entire coast of Mississippi; even then the ordering of vessels from the mouths of the Mississippi River to Ship Island would entail such enormous expense in towage, loss of time, and in various accidents by storm and fire, as would effectually drive foreign commerce from the Mississippi River annually during the months of May, June, July, August, September and October."

By substituting National Board of Health for "Board of Health of the State of Louisiana," this quotation from the Louisiana State Board Report suggests that the practice of the National Board would be the detention of, and the exaction of quarantine fees from, *all* vessels, no matter what their condition or whence they come, notwithstanding the explicitness of the National Board's requirements:

"Vessels which will be required to stop at Ship Island Quarantine Station are, (a) those which actually have infectious diseases among their passengers or crew; (b) those which have had such diseases on board during the voyage or their stay in a foreign port; (c) those which sail from ports dangerously infected with epidemic diseases or touch at such ports; (d) those vessels which will be required by the quarantine regulations of Louisiana, Mississippi or Alabama, to stop at Ship Island Station."

But in pleasing contrast with the Louisiana State Board of Health is the New Orleans Auxiliary Sanitary Association—an Association which represents the mercantile interests of the city. Recognizing the terrible warning of 1878 as the fruit of persistence in the old ways, this Association was organized on the 31st of March, 1879, for self-protection in the future; there was no going amiss for material to work upon. An appeal for funds was promptly met, and with the hearty sympathy and co-operation of the New Orleans Medical and Surgical Association, sanitary work has been its emblem. No money or time has been given and but little ink spent in discussing the relations of filth to disease, or hair splittings in regard to its essential nature, but thousands and thousands of loads of filth have been removed, an efficient system of garbage removal introduced, the street gutters statedly flushed, and a welcome given to every one who would aid in the effort. Where so much was and is to be done, piecemeal labor, in the beginning, at least, was a necessity; but there is a clear appreciation of the utmost importance of the great works yet to be accomplished for the redemption of New Orleans. A pure and plenary water supply, drainage and sewerage of the city, drainage and filling in of open sewers, sunken lots and swamps, are all in

contemplation, and backed by a determination which knows no retreat. In the eloquent words of Edward Fenner, Esq., Vice-President of the Association:

"A perfect sanitary condition of this city must be maintained or the railway by which you hope to increase your trade will prove, in the event of failure, but an additional pretext to erect barriers against it."

CUBA.—Notwithstanding the efforts of the Commission appointed to study the nature of yellow fever in Cuba, there seems to have been no effectual effort to abate it; the disease still continues to advance.

The *Cronica Médico-Quirurgica* of Havana states that yellow fever has raged so fiercely in San Diego del Valle* that in a few days more than forty deaths have occurred, which is wonderful, considering the few inhabitants in the place.

Two physicians, Drs. Dominguez and Barnet, who returned to Santa Isabella from San Diego, state that the disease is undoubtedly yellow fever; that the characteristics are well marked, and what is most astonishing, it is more malignant among the natives of the Island than among the Spaniards. It was brought from Sagua by a soldier who passed through the place. Dr. Roca, a practitioner of the place, and his wife both lost their lives by the fever.

The Clinical Society have appointed a Commission charged with the study of yellow fever. This commission have appointed a subcommittee to study the epidemic on the spot, and the results of their inquiries will be presented to the Society.

In this connection the interesting reports of Dr. A. G. del Valle will deserve attention. The report gives the deaths from yellow fever in Havana for every day in the year. The whole number for January, 1880, was 15; for February, 10; March, 22, and April, 45. Total for four months, 92; total for corresponding four months of 1879, 43. During the four months following, there were in May, 41; in June, 146; in July, 274, and in August, 158. For the four months, 619. During the last four months there were in September, 79; in October, 61; in November, 23, and in December, 18. Total, 181.

In the January number of the *Cronica*, Dr. del Valle gives the following resumé: There occurred in winter, 47 deaths; in spring, 231; in summer, 512, and in autumn, 102; making the total for the year, 892 deaths.

The following table from the same author may be compared with the statement just given:

*Dr. Albarran, a distinguished practitioner of San Diego del Valle, is preparing an exhaustive account of the epidemic which has prevailed in that district during the last year.

MORTALITY IN THE CITY OF HAVANA.

1871	8,290	1876	7,438
1872	6,136	1877	7,139
1873	6,935	1878	8,594
1874	8,523	1879	7,826
1875	7,044		
		Average	7,553

Population, 195,437: Deaths per 1,000, 38.65; Daily mortality, 20.55.

THE ANTILLES AND SENEGAL.—The *Journal d' Hygiène*, for January 20th, 1881, states that the *Bulletin de Statistique Municipale de Paris* remains silent in regard to the sanitary condition of our French colonies in the Antilles and Senegal, notwithstanding that so many families are interested in knowing the real state of the sanitary condition of these colonies.

"In the absence of official documents we publish intelligence furnished by our correspondent at *Camp Jacob*.

"AT GUADALOUPE, the yellow fever makes no farther progress, for the simple reason that all the troops have been sent to Camp Jacob, where they are safe from exposure. However, there are a few cases here and there among the few Europeans who are not acclimated and who cannot remove to the high districts. The cases occurring are all very severe.

"AT MARTINIQUE, an epidemic of *vomito negro* is raging with the greatest intensity: the soldiers have not the advantage of an elevated camp as in Guadaloupe. The stations have been scattered as much as possible, but it is easy for the soldiers to be imprudent in various ways.

"During the first week of December (1st to the 7th) there were 9 cases of yellow fever, of which 5 died.

"LA CATE FERME (Gautemala, Panama) is also infected with yellow fever along the whole line of the coast, but the local authorities do all in their power to hide the real death rate.

"Most assuredly, non-official hygiene and statistics have not yet ceased to be important!"

SOUTH AMERICA.—The Isla de Flores seems to be the quarantine station for Buenos Ayres.

Lazareto de la Isla de Flores, Dec. 28, 1880.

SR. DIRECTOR DE LA *Revista:* The season for quarantining vessels coming from Brazil began here on the first of this month. According to our maritime regulations, vessels are detained three days for preliminary observation, if they arrive from Brazil with a clean bill of health, and have no suspected cases on board. Nothing unusual occurred until the 17th of the month, when the French packet *Niger* ar-

rived from Rio Janeiro, with a patient on board going to Buenos Ayres. The patient was a young Italian, 28 years of age, with an excellent constitution, whom the ship's surgeon, in his report, represented as suffering from *gastric disturbance* (embarazo-gástrico); having examined him with great care, I found a well-marked case of *yellow fever, of the gravest character*. At the request of the doctor and the commander, the patient was isolated and taken to the hospital, where he died on the third day after.

As was very natural, when the case was pronounced to be one of *yellow fever*, much excitement was caused among the passengers, and to escape unmerited censure, I asked the agent of the company at Montevideo, who was present, that, for the satisfaction of the passengers, as well as for the purpose of assuring the captain and the surgeon of *Niger*, that he would summon medical counsel from Montevideo. This was done by telegram to the health officer of the port; but no one was sent. Thus the excitement among the passengers destined for Buenos Ayres continued, and, notwithstanding their complaints, they were subjected to a delay of ten days.

The case of yellow fever occurring on board the *Niger* is one of many which I have seen in this hospital, and which I have detailed, heretofore, in my communications to the *Revista Médico-Quirúrgica*. These are mostly due to the negligence of the surgeon, who allows persons to embark at Rio Janeiro without proper examination or sufficient inquiry into their previous condition, thus causing great injury to the company, who have furnished the ships with so much liberality, which they have destined for the trade of the Rio de la Plata, and even more injury to commerce in general, and causing so much alarm to the sanitary authorities of both republics—Montevideo and the Argentine Republic.

I have seen, with great regret, that the account I gave of the case of yellow fever on board the *Comet Garnet* of the English navy, which occurred in September last, has wounded the pride of the distinguished Dr. Caulbourne, who has accused me of making charges against Dr. Winnis, chief surgeon of that vessel, which I did not believe just, nor did I intend that my statements should cast any reflection on the scientific attainments or competency of that gentleman, who I believe deserves the highest consideration and respect. . . . .

There are at present many deaths occurring in Rio Janeiro, but vessels from other ports in Brazil are entirely free.

Bad Odors.—The Hunter's Point stenches to which the readers of THE SANITARIAN are no strangers, are at the time of this writing undergoing a special investigation at the hands of a committee of the State Board of Health of New York. A remarkable feature of the

investigation at the outset, was the apparent taking it for granted by the officers of the New York Health Department, and the residents of Murray Hill, that it was for their special benefit; and that if the sources of the foul odors could be maintained without offending the nostrils of New York they might be. And one officious individual went so far as to anticipate the purpose of the committee by certain puerile suggestions in regard to the time of day, the special locality in New York where most noticeable, from what direction the odors proceeded, etc., as if the investigation was to be wholly confined to the influence of smells at a distance. Professor Chandler dwelt in particular upon the stench arising from *sludge acid* of the petroleum refineries as the chief of the bad smells, which were at the present time only about one-tenth as bad as they were several years ago, the use of sludge acid having been done away with through the efforts of the New York Health Department. Professor Janeway, of the Health Department, also thought there had been a lessening of the smells from Hunter's Point in the last two or three years. The smell of petroleum was the most distinct, although occasionally at Bellevue he would catch an edge of the flavor of the cream of tartar works.

And such was the purport of all the testimony elicited from the residents of New York. A few persons stated that they had occasionally been nauseated by them, and that they knew of others who had been similarly affected.

Mr. Thomas C. Smith, manufacturer of chinaware, of No. 140 Milton Street, Greenpoint, stated that the region of Long Island City most affected by the stenches commenced at Hunter's Point and extended one and a half miles along Newtown Creek. The most disgusting smells were caused by the sludge acid used as a solvent for the dead matter in fertilizing factories, and a bone-boiling establishment was also a terrible breeder of smells. There was another factory devoted to the purifying of hog's hair from which emanated the most insufferable odors. But even this was not as bad as the smell from the places where they boiled dead animals in a state of putrefaction, the stench from which vied with that of the cream of tartar works at the corner of Milton and West Streets. This cream of tartar factory was probably the worst smell-breeder in Hunter's Point, which was saying a good deal. People had been driven from their homes by the stenches emitted from it.

Besides these there are ammonia works, super-phosphate works, potash works, manure heaps, and the hundreds of acres of marsh saturated with the drainage and soakage of filth; and withal hundreds of acres more of "sunken lots," in whole or part filled in with city garbage dirt: the odors from these sources appear to have been

so much heavier than the odor of sludge acid, as not to have been much noticed across the river; but in their vicinity to the thousands of people who travel by the Long Island Railroad throughout the year, and to the hundreds of thousands who thus travel on their way to the watering-places of the shore during the summer months, when the foul odors are in fullest blast, they are a nuisance indescribably intolerable, and unquestionably dangerous to health.

Dr. A. N. Bell stated before the committee that he had been more or less familiar with the region for a number of years. That it had been in the first place the dumping ground of every species of movable filth from New York and Brooklyn; the creeks and tributary streamlets had been made the receptacles of Brooklyn sewage; establishments for rendering dead animals had been placed upon it, and more recently the various factories and works already described, insomuch that if all the works thereabouts were now razed to the ground the stench would abound for five years to come—so thoroughly was it embedded in the soil. Of the deleterious influence of such odors on the health of persons who encounter them, there was, in his judgment, no room to doubt, for most of the emanating gases were irrespirable, irritating to the throat, and when so dilute in the atmosphere as to be respired, decidedly sickening.

Drs. Van Gieson and Denler, resident practitioners of Hunter's Point, who were frequently called to attend sick persons in the neighborhood of the factories, had known of several deaths clearly attributable to them—particularly of children who were first affected with the ordinary diarrhœal diseases. The odors from the cream of tartar and ammonia factories were the most poisonous, but the others and the manure heaps greatly contributed to the sickening effects. Nervousness, headache, nausea and sleeplessness were common to many persons living within the scope of their influence.

Dirt is the universal enemy of good health and good morals; it nestles in the skin, befouls the mouth, sticks to clothing, despoils carpets, penetrates soft floors, crowds into libraries, adheres to books, side walls and ceilings, fills the straw of city cars and the cabins of ferry-boats, travels by rail and takes refuge in churches; it is the bane of the dairy and the kitchen; poisons the milk-pans and ice-pitchers, settles on the dishes, into the cooking utensils and wash-tubs; it is stored in crevices, corners, closets, pails and buckets—made into *soap!* Alas! for such a finale!

In all its forms, dirt is the antipode of cleanliness, but is sometimes very deceptive. For example, let any one who has apparently clean hands wash them in three waters—firstly, in cold water without soap; secondly, in cold water with soap; and thirdly, in warm water with

soap—and note the difference in the feel of the hands and the appearance of the water ; the first water is scarcely colored, the second considerably, and the third decidedly by the amount of dirt removed, provided always, the soap is clean ; for of all dirty things, impure soap, that which is made of kitchen dirt-fat, is among the dirtiest.

Every person who has had the care of the sick or the nursery knows the refreshing effect of cleansing the skin. In most diseases, the excretory function of the skin is augmented, and in children it is at all times active.

The relief experienced by sick persons from having the skin carefully cleansed with warm water and soap, and the crowing happiness of infants after undergoing the same process, are matters of the commonest observation. By the same active function of the skin, the clothing, especially the underclothing, sometimes becomes so saturated with the excretions as to be not only injurious to the wearer, but extremely offensive and sometimes dangerous to other persons. And in this relation, above all, it is necessary to consider the importance of pure soap, such as Higgins' "German Laundry Soap." For it is evident that if to clothing soiled with the excretions of the skin, the unsaponifiable and putrescent dirt-fat of the kitchen be added, the clothing will be dirty still. And still worse is the condition of dirty floors "swabbed up" with dirty soap-suds, of which there are thousands in New York, whose tenants are known by their sickening odors withersoever they go.

For the dirt of close rooms, whether they be for sleeping, living, entertaining, traveling or worship, wash it out, beat it out, sweep it out and flush it out with pure air—it will not stick if there be an abundance of pure air. For the dairy and the kitchen, see to it that there is no dwelling-place for kitchen and dairy utensils in common. Milk and butter should never be in the same safe—or even pantry—with the cold meats, fish or aromatic vegetables—nor even in the ice-box, if there is any doubt about the cleanness of the ice. The ice-pitcher should be supplanted by the bottle—the *water*-bottle—fill it with pure water, stop it well and set on the ice *ad libitum*—serve cold. Milk and butter can be treated in the same way. And as for the mouth, it should be rinsed with clean water after every meal, and washed with soap and a soft brush occasionally.

The Brooklyn Department of Health, in view of the continued prevalence of diphtheria, and other contagious diseases, and recognizing the importance of promptitude in dealing with such diseases, in order to prevent their spread, has divided the city into a number of convenient districts, for each of which a sanitary inspector has been appointed, and requires that hereafter each case of conta-

gious disease be reported directly to the inspector of the district in which the case occurs. By this means it is hoped that the action of the Department in isolating the patient, providing proper disinfection and notifying the schools, may be more promptly effected.

In order to facilitate the work as much as possible, physicians are furnished with forms printed on postal cards, and specially requested to fill out the report of each case, when first visited and while at the patient's residence, and then to leave it with the inspector of the district at once, or deposit it directed to him in the nearest mail-box. The example is well worth following in other communities.

Newport, R. I., is in several respects the most remarkable city in the United States. For its healthful situation and beautiful scenery, its magnificent harbor and splendid shore for surf bathing, for being the summer resort of a larger proportion of the most wealthy and refined people, than any city of its size; and *especially* for being governed by a common council which gloats in municipal dirt; a common council whose sensibilities have been so blunted by municipal filth as to be incapable of appreciating the advantages of cleanliness. Back-yard excrement storage, with its appendages; the pest-wagons of the night scavengers and leaky swill carts traverse the streets, dribbling their filthy contents all over the city; cesspools, piggeries, manure vaults, and various factories add to the soil poisoning and foul emanations which welcome the opening of the season to the patrons of fashion and fever! All of the much-talked of and advertised plans for draining and sewering the city and doing away with the abominations above glanced at, was talk and advertisement *only*. Filth reigns supreme under the culture of a common council, who, according to the evidence of a published letter of the accomplished Secretary of the Sanitary Protective Association, believe measles a blessing to the public schools, and to be encouraged as among the necessities of a public education; who believe Boards of Health a nuisance, and filth wholesome.

The Smokers are Clamorous for "smoking-cars" on the elevated roads of this city. It is encouraging to note a vigorous protest against the proposition in the editorial columns of the *Evening Post*, which says: "This demand the directors should peremptorily refuse to grant." It also declares that "habitual smoking at all times and in all places is already carried too far, and there is no good reason for encouraging still further a practice which injures many persons beside those who inordinately indulge in it." To all of which we say heartily, "Amen."

Poisoning by Illuminating Gas is the subject of a very timely and interesting paper by Dr. JOHN MORRIS in the December

number of the *Maryland Medical Journal*, with special reference to carbonic oxide as the deadly agent, and not carbonic acid, as is commonly supposed; and above all to the dangerous presence of this substance in *water gas*, which has been extensively advertised as being exceptionally free from the impurities common to other varieties of manufacture. The paper is the outcome of a fatal case which fell under Dr. Morris's professional care, and another which came to his knowledge, where water gas was the kind in use. They are both carefully described, and especially considered in their relations to medical jurisprudence, showing the absolute impossibility of ascertaining the cause of death in any such case in the absence of history: the evidence of suffocation only being present with no other characteristic lesion.

Barstow's Wrought Iron Furnace, properly set and supplied with a plenary amount of fresh air, is one of the most efficient and delightful house-warmers it has ever been our privilege to enjoy; this conclusion is based upon three winters' use, under extraordinary house exposure. Economical in fuel, plenty of warmth, fire easily kept, no gas escape, no sore throats.

Baby Carriages and Bicycles are the subject of an interesting paper by Dr. Henry H. Smith, reprinted from the *Medical Times* of January 15th, showing the danger of the jolts and other rough usage to which infants are frequently subjected in the one case, and of the wanted adaptation to length of limbs, and consequent risk of deformity, in the other. Such warnings are always timely, but we are inclined to think the dangers of the bicycle, as compared with its utility, are overrated. To occasional upsets, and possible pes-equinus, and it may be once in a while to a broken leg or arm, the young bicyclist may be subject; but these and such like accidents are no just arguments against the utility of the bicycle for straightening the backs and expanding the chests of school-boys after four or five hours' school-room torture benches and foul air. As well condemn horseback riding or boating, because of an occasional neck broken, or hypertrophied heart.

"Professional Relations Between Physicians and Druggists," is the subject of a circular before us, emanating from the joint action of committees of the "Medico-Legal Society," and "Representative Pharmacists of Philadelphia," accompanied by a form of "Special Mutual Agreement," to be signed by both parties with the professed purpose of suppressing the use of nostrums and *proprietary* preparations, and the common practice of apothecaries of renewing physicians' prescriptions without the permission of the prescribers. The circular concludes by inviting the particular attention

of pharmacists and physicians to an appended letter, which purports to give the chief cause of misunderstanding between the prescribers and dispensers of medicine. This letter strongly condemns all *trade mark* proprietaryships, etc., and names two houses in particular as "typical among manufacturers who are not guilty of the abuses" referred to, but who are nevertheless notorious for the number of their non-officinal preparations and mixtures with doses and directions for the use of any one who may see fit to purchase them, whether directed by a physician or not!

We are at a loss to comprehend any benefit to physicians by subserviency to such types, or to druggists in general, who may be willing to sink the significance of their calling for the lack of an M.D. to a Ph. G., which appears to be the special qualification necessary to enable them to ride two horses at once.

Bellevue Hospital Medical College Faculty, after a losing effort to increase the requirements for graduation to three winter sessions, and additional courses on special subjects, has been reluctantly compelled to abandon it. "With an undiminished desire to continue the requirement of three sessions, and with not less willingness than heretofore to make whatever personal sacrifices may be necessary, the Faculty feel obliged, by a proper regard for the prosperity and usefulness of the college, to return to the requirements for graduation which were in force prior to the session of 1880–'81. . . . It was hoped that the progressive movement of the BELLEVUE HOSPITAL MEDICAL COLLEGE would secure approval and coöperation on the part of the medical profession sufficient to render the change feasible. In so far as a judgment can be formed from the present session, the profession is not prepared to sustain the movement."

"For the session of 1881–'82, the requirements for graduation will be three years' pupilage, after eighteen years of age and attendance upon two full courses of lectures, the last being at the BELLEVUE HOSPITAL MEDICAL COLLEGE."

The Polytechnic Association of the American Institute, at its meeting March 3d, had an interesting discussion on

ELEVATORS.—The subject was opened by Mr. Blanchard, who sketched the history of elevators and their necessity to high buildings. He favored especially hydraulic power as the easiest and safest.

Hydraulic telescopic elevators had been used, as in the New York Post Office. They were safe, as has been demonstrated by numerous accidents, from which no harm to passengers had resulted.

The hydraulic elevator of the present time differed from those just mentioned in having long cylinders, made in sections, in which was

placed a piston to which was attached two piston rods. In the cross-head of these rods was attached the lower pulley of the purchase. This form of elevator was drawn upon the blackboard and its action explained.

A number of well-known elevator manufacturers were mentioned and their works discussed.

Mr. Johnson illustrated the principal forms of elevators used at the present time. The power is usually furnished by a tank at the top of the building. When city pressure is great, as at Boston or Cincinnati, and the price of water small, water is taken from the street mains. The cost varies from 3 to 5 cents per trip. The water runs at once to the sewers after being used. In hotels they had tried to take it to their laundries, but it does not pay to raise it more than 10 feet.

Elevators should all be safe, even those for freight, for porters and others will use them in spite of all authority.

In reply to questions in regard to safety appliances, he said that many of them were very good, and most of them would do their work when in order; but nobody ever knew when they were in working condition or when inoperative, and gave many interesting instances. The best thing that he knew of, and which he considered perfectly safe, was the Ellithorpe air cushion. This was first applied to dumb waiters. It has been applied to a few elevators in this city and elsewhere.

In reply to questions, he could find no material difference in the cost of working steam and hydraulic elevators of equal power. The hydraulic elevator costs as much to run empty as loaded; with steam there is a saving when there is no load. The hydraulic elevator can be run much faster than the steam, but the speed diminishes with the weight. When steam is used the speed is uniform, but the quantity of steam varies with the amount of load.

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Literature.

The Second Annual Report of the State Board of Health of Kentucky, for the fiscal year ending March 31, 1880, pp. 136, shows marked progress in the collection of vital statistics, and the organization of local Boards of Health—essential work of the Board as a foundation for the fulfillment of its purpose. The means specially urged, and with an encouraging prospect for securing full and accurate reports of vital statistics, are the county assessors. Upon these officers, who are in personal communication with every

family in the State for assessorial duties, has been devolved the additional duty of collecting vital statistics. There are many of these officers, however, who do not appreciate the importance of the extra duty. Of 138 counties in the State, with an aggregate population, in 1870, of 1,321,011, the assessors of 128 counties, comprehending about five-sixths of the population, reported but very imperfectly. The incompleteness of the returns is urged upon the county Boards of Health as requiring their special attention to the importance of educating the people as well as the assessors to a due appreciation of the significance of the work.

The total returns for the year, on a population of 1,071,720 (1870), sum up: Births, including 536 still-born, 22,381; Marriages, 6,616; Deaths, 7,947. Of the total number of deaths reported, 971, or 1 in every 8.18 were from consumption; 753 from acute lung diseases; 445 from remittent fever; 298 from diphtheria; 293 from inanition; 291 from whooping cough; 284 from croup; 275 from diarrhœal diseases; 225 from typhoid fever; 172 from scarlet fever; 128 from yellow fever; 108 from scrofula. A category abundantly significant of unsanitary conditions, reproachful of the intelligence of the people, and demanding the earnest attention of all persons concerned for the welfare of the State.

The New York State Board of Health—First Annual Report.—We have received at the time of this writing the preliminary portion of the report only, containing an account of the organization of the Board, a review of the public health laws of the State, a comprehensive sketch of preventable and prevalent diseases, and a summary of the special reports and papers to follow: eminently suggestive of a well digested scheme of work, and calculated to satisfy the high expectations which have been formed for the future of the Board.

Transactions of the State Medical Society of Kansas, 1880, pamphlet, pp. 167, contains papers on *Antiseptic Surgery* by T. S. Flood, M.D.; *Report on Diphtheria*, by D. J. Ross, M.D., and several short papers and reports on subjects, practical medicine and surgery. The special point of Dr. Flood's paper is the use of *Eucalyptus*, in the form of extract, as a surgical dressing, instead of the hitherto more common carbolic acid dressings, claiming for it at least equal antiseptic properties.

Dr. Ross' paper on Diphtheria only pretends to summing up knowledge on the subject, not the contribution of anything new.

C. C. Furley, M.D., President, in his annual address, urges the importance of a single Board of Examiners as a test of qualification to practice medicine, instead of two, which now appear in conflict;

and presses upon the attention of the Society the necessity of united effort for the establishment of a State Board of Health; and for the passage of a law regulating the sale of drugs in the State, similar to that which obtains in the State of New York.

Yellow Fever: Its Ship Origin and Prevention, by Robert B. S. Hargis, M.D., 8vo., pp. 80, is for the most part a republication of papers contributed by the author to several periodicals, some of them to THE SANITARIAN, within a few years past, advocating the exclusive nautical origin of the disease, and defending himself by numerous citations against the criticisms which have been passed upon his theory. It is a valuable contribution to the history of yellow fever, as containing not only the extensive observations of Dr. Hargis, but all the facts he has been able to adduce from other observers in support of his doctrine. Philadelphia: D. G. Brinton, M.D.

Anæmia in Infancy and Early Childhood, by A. Jacobi, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, New York, reprint from the *Archives of Medicine*, February, 1881; a pamphlet of twenty-seven pages, which contains the cardinal doctrines essential to the successful treatment of the diseases of children, and should be read by every medical practitioner. G. P. Putnam's Sons, New York.

Vick's Illustrated Floral Guide for 1881 is a handsome book of 110 pages, containing hundreds of illustrations, and is the best seed and plant catalogue issued. It is printed on fine paper, and has a colored frontispiece and a portrait of Mr. Vick. Price only ten cents. James Vick, Rochester, N. Y.

The Illustrated Scientific News is among the handsomest of the new periodicals before us, and bids fair to be among the most useful and popular. Thirty-two pages, large octavo, profusely illustrated. The March number contains engravings of Capt. Ead's proposed ship-railway across the Isthmus, and a novel hydraulic locomotive; an illustrated description of the manufacture of paper-hangings; illustrations showing how the deceptive curve is produced in casting the ball by the base-ball pitcher—his attitude, and how he holds the ball; a variety of engravings of novelties in science and the useful arts; ornamental woodwork, pottery, pottery vases, etc., ancient and modern, and many valuable recipes for artisans and housekeepers.

This publication will be found instructive and entertaining to all classes, but will be best appreciated by the most intelligent. Published by Munn & Co., 37 Park Row, New York, at $1.50 a year and sold by all newsdealers.

Yonkers, N. Y., with a population of 18,892, by annual report of the Health Officer, shows a death rate of 14.29. The chief causes of death were: consumption 56; acute lung diseases, 42; diarrhœal diseases, 24; marasmus, 15; meningitis, 13; malarial fevers, 8; croup and diphtheria, 9. The best record for several years, and, the Health Officer remarks, better than can be promised for the future, "if the practice of filling lots with garbage and refuse is not stopped."

Buenos Aires.—Population nearly 250,000. The whole number of deaths for the year was 7,073. The *Revista Médico-Quirurgica* gives the following among the causes of death:

Circulatory system, 432; respiratory, 1,619; digestive, 750; nervous, 1,135. Hepatic diseases, 110; surgical, 490. Of particular diseases the chief were: cancer, 177; diphtheritic affections, 335; cerebral apoplexy, 114; bronchitis, 153; congestion of the brain, 109; meningitis, 389; pneumonia, 462; consumption, 774; small-pox, 793; heart disease, 334; arrest of development, 186, and still-born, 212. The most astonishing of all the causes of death is the inexplicable disease *infantile tetanus*, which seems to prevail in that city to a greater extent than anywhere else in the world. Last year it caused 247 deaths, which is about 3½ per cent. of the entire mortality. The estimated population would make the death rate about 28. per 1,000. The death rate for 1876, as published in THE SANITARIAN for May, 1877, was 26.38 per 1,000.

A Doctor's Suggestions to the Community—being a series of papers upon various subjects, from a physician's standpoint, by Daniel B. St. John Roosa, M.D.—may be read with profit by all persons interested in the relations of physicians to the family and to the public—and who is not? Who would not know the proper amenities to be observed between themselves and the doctor in time of need? The relations of the physician to the hospital? Who are the true benefactors to sick poor? How to take care of the eyes—indeed, how to so promote the health of all the organs in the body as to have the least possible sickness? What the relations of physicians to the State in the promotion of public health? The bare naming of these subjects, to which this book is devoted, ought to, and surely will commend it to all intelligent readers. It is admirably written, and gotten up in the excellent style common to the publishers—Messrs. G. P. Putnam's Sons, New York.

Aurora, Ill., City Officers' Report for 1879-80, appends a brief report by the Board of Health, which, on an *estimated* population of 14,555, reports an annual death rate of 11.82 per 1000; but by the recent census of 11,825 population, an actual ratio of 14.55, the num-

ber of deaths being 172. The chief proximate causes of death reported were: consumption, 24; acute lung diseases, 20; diphtheria and croup, 12; diarrhœal diseases, 11. The remote and accumulating causes of death urged upon the attention of the Common Council are surface filth, privy vaults, cesspools, and house-drains near the wells.

Bosworth's Diseases of the Throat and Nose,* is a profusely illustrated book on the subjects of its title, excepting diphtheria and the throat manifestations of the exanthemata, and some other affections which are thought to belong more particularly to works on general medicine. The author's excellent opportunities and thorough familiarity with the standard literature of the subjects of his treatise have served him instead of the necessity for reference to much that has been written on the same subjects within a few years past, and from this point of view he has written, as he professes, a strictly original book. But in reality he has very little, if, indeed, anything in it which is really new. And it would evidently have been better if he had made references and been less hasty in his work, for text and illustrations are alike redundant. It is, notwithstanding, a useful book for young practitioners especially, who will rarely go amiss in reference for any of the ordinary diseases of the upper air passages, and the best manner of treating them.

Publications Received.—Fothergill and Wood's Food for the Invalid—Macmillan & Co.; Wilson's Easy Lessons in Sanitary Science —Presley Blakiston; Jacobi's Treatise on Diphtheria—Wm. Wood & Co.; Sanitary and Statistical Report of the Surgeon-General of the Navy; Utica Board of Health Report; Report of the New York Society for the Prevention of Cruelty to Children; Adulteration of Food—Congressional Committee Report; Worman's First German Book—A. S. Barnes & Co.; Connecticut State Board of Health Report; Wood's Library of Standard Medical Authors for 1881; Vols. I. and II., Dickinson's Albuminuria, Piffard's Materia Medica and Therapeutics of the Skin—Wm. Wood & Co.; Baltimore Health Department Report; Cowling's Aphorisms in Fracture—Morton's Pocket Series; Report of American Society for the Prevention of Cruelty to Animals; Augusta (Ga.) Board of Health Report; Brewer on Fermentation in its Household Relations.

* A Manual of Diseases of the Throat and Nose, by Franeke Huntington Bosworth, A.M., M.D., Lecturer on Diseases of the Throat in the Bellevue Hospital Medical College, and physician in charge of the clinic for the diseases of the throat in the out-door department of Bellevue Hospital, Fellow of the New York Academy of Medicine, of the American Laryngological Association, and Member of the Medical Society of the County of New York. 8vo. pp. xx-427. Profusely illustrated. New York: William Wood & Co.

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SANITARY PROTECTION AT NEWPORT, R. I.*

By Dr. Horatio R. Storer.

*Read (by title) before American Public Health Association, New Orleans, December, 1880.

It has been intimated to me that a brief statement of the present condition of so-called "Sanitary Protection" in Newport, R. I., would be acceptable to the Association at its present meeting.

The organization referred to, similar in aims and working plan to that of Edinburgh, was formed in the autumn of 1878, its main purpose being then set forth as follows: "The Association, in reality a Mutual Insurance Company for the preservation of private and public health, is not intended as a substitute for municipal inspection, and will not conflict with the public authorities, but will supplement their action. The Association will, however, be in a position to bring to the notice of the public authorities any infractions of their regulations, which, in the opinion of the Council, may call for the adoption of this course. To this end it will receive, and patiently consider, complaints of sanitary defects or nuisances, public or private, within the city limits."

With the details of its system, as published by the Association, and since copied by several journals,* and referred to in many State and city health reports, and adopted by other organizations of similar character to its own, your members are already familiar.

During the now two years of its existence, almost daily opportunities have afforded themselves to the Association of influencing, directly or indirectly, the extremely conservative public opinion of this city regarding sanitation. These have been availed of. As evidence upon this point, an editorial in the Newport *Daily News* of July 29, 1880, may be cited: "No organization in our city," it states, "is doing more for Newport than this. It has aided largely in suppres-

* See this journal, March, 1879.

sing dangerous elements in private dwellings and in public places, and has at the same time materially aided in maintaining confidence abroad as to the sanitary condition of the city. When we remember how largely Newport is dependent on her good name for her prosperity, we shall be able to appreciate the importance of a sanitary organization of this character."

The Report of the Association for its second year, rendered in July, 1880, by the Recording Secretary, Lt.-Commander Stedman, U.S.N., will interest your members:

"The inhabitants of Newport," said Commander S., "owing to the situation of their city, have always enjoyed remarkably good health; and the fact that this has been the case is looked upon by them with pride and satisfaction, and they have been unwilling to open their eyes to the present or to look forward to the future. It is sufficient that the pure air of heaven has, in the past, brought health and longevity to them, and it is taken as a matter of course that such will be the case for all time to come.

"To be sure, the breezes, as they blow fresh from the sea, are pure as of old, but as they come sweeping through the now thickly populated town, passing through back yards filled with mire of slops and filth, and over stagnant water and marsh, the receptacles of garbage and sewage, the pure oxygen is soon contaminated with gases which are not health-giving, though they may not immediately kill.

"There was a time when wells dug down into the solid rock furnished pure spring water. By an occasional cleaning of the well, one generation after another could go on using this water without a doubt of its purity. But estates have been divided and sub-divided, other wells have been sunk, and new cess-pits dug, the latter, perhaps, on account of the narrow limits of the place, close to the well of some old homestead.

"Soon the soil becomes impregnated by the liquid filth, and, naturally, the water of the wells in the neighborhood is infected. This has continued until it is the exception where the water of a well is found fit for domestic purposes.

"In some portions of the city, owing to the neglect of the public authorities to remedy existing evils, the air became laden with poison germs, and so reduced the system of many, that they readily fell victims to any contagious disease which might spring into existence.

"The importance of placing under strict vigilance the inmates of a house where such a disease existed, was overlooked, so that the death-rate of Newport, though small as compared with other cities, was large in those cases which might have been prevented.

"Eminent physicians, summer residents of Newport, anxious as well for the reputation of the city, as to adapt the place to the necessities of city patients, alluded in print to the importance of measures being taken to improve its sanitary defects, and complaints were addressed to the city authorities by native physicians and others. But these appeals were unwelcome and unheeded, and, far from what was earnestly desired, resulted in openly expressed ingratitude to the authors of them.

"Although the Board of Aldermen were empowered by the State to appoint a Board of Health, which should have all the powers and

duties conferred upon the Board of Aldermen, as a Board of Health, and notwithstanding the wish of the people, and a memorial signed by the physicians of the city, yet they practically refused to exercise their powers, nor would they confer them upon others.

"Thus matters stood in the fall of 1878, when the Sanitary Protection Association was organized for the purpose of mutual insurance, an organization of citizens acting in self-defense. But, by its constitution, it has no political interests whatever, but was organized strictly for the preservation of private and public health.

"It is not, as many seem to think, intended as a substitute for municipal inspection, nor will it conflict with the action of the public authorities; but it solely wishes to assist them in their protection of every citizen.

"The new principle of sanitary protection was originally conceived by Prof. Fleeming Jenkin, of the University of Edinburgh, in the early part of 1878, and an association was formed in that city, the objects of which form the basis upon which the Newport Association is founded. They are:

"To provide its members, at moderate cost, with such advice and supervision as shall insure the proper sanitary condition of their own dwellings.

"To enable members to procure practical advice, on moderate terms, as to the best means of remedying defects in houses of the poorer class in which they are interested.

"And to aid in improving the sanitary condition, and consequent good repute, of the city, by following such course as, in the opinion of the Council, may seem calculated to promote this object.

"The tardiness which the public shows in availing themselves of the benefits of such an association may be attributed to apathy in some, and in others, to ignorance. We are constantly reading of death and disease, due to the neglect of the simplest precautions; we are instructed through the columns of the newspapers, and by sanitary tracts and primers as to what we should do; but with the best will in the world we cannot always be thinking about drains, nor can every householder qualify himself for the functions of house surveyor and medical officer of health; so the practice of the father of a family usually is to let things alone until, under the alarm of illness in his house, he decides that the drains must be looked into. Advice may be given and work done by some local tradesmen, who may be ignorant or careless of sanitary requirements, and one cannot feel certain that he has got his money's worth in safety.

"Matters are somewhat mended when a sanitary engineer of repute is consulted, but the bill will be much larger. And so, with many, the fear of expense induces them to subject themselves, and other people, to much risk.

"The Association now numbers twenty-six members, and eighteen inspections have been made, the majority of them only when sickness in the family required it; and in all, with but one single exception, very grave defects have been discovered.

"We all know that the result of long experience proves that poison germs enter from without, chiefly by the agency of sewer-gas and drinking water. Serious illness may be contracted by breathing air

containing an almost infinitesimal quantity of tainted gas. Simple sewer-gas is little worse than a bad smell, but the tainted gas may be so poisonous, that a very little introduced into a bedroom, so little as to be quite imperceptible to the nose, will almost certainly give typhoid fever to a person sleeping there. How important then it is, that we should not only put our houses in perfect order, but keep them so—and this can only be done by a systematic inspection.

"In some cities an official exists, whose duty it is to inspect the execution of all work which pertains to the sanitary arrangement of a house, while it is being built, but his duty does not extend to any subsequent inspection.

"The drains and pipes may have been well designed, and the work well executed, but the decay and failure of drains and pipes is especially dangerous, because these are invariably out of sight. The lead and iron pipes are gradually eaten away, until large holes admit sewer-gas behind the paneling and so into our bedroom. Yet no greater warning is given than a slight closeness in the room.

"Drains crack underground as old or new houses settle, and the sewage pours into the basement; some one of the family, with the sense of smell more acute than with others, complains of bad odors, but the evil grows so slowly, that we are not forced into action on any one day.

"Cement crumbles away from joints originally well made; rats eat through putty, and then at the junction, perhaps, of an expensive leaden pipe with a well laid drain, we have a hole, through which, day and night, sewer-gas pours into the house; and yet the house may be considered remarkably sweet.

"Not unfrequently, the passage of the sewage through the drains is wholly interrupted by the mere accumulation of kitchen grease or rags; then, while the sewer retains the solid filth, the liquid oozes out at every pore, and yet no harm is suspected. Sometimes even, in a hidden pipe, no trap whatever is introduced between the house and the sewer, and no one is at all the wiser until disease breaks out.

"These accidents are samples of ordinary and inevitable decay, even when work has been well designed and well executed, as has been demonstrated time and time again; and in the inspections made by the engineer of this Association, every one of the defects enumerated above has been encountered.

"This shows the importance of a systematic inspection. But few people are willing to incur the expense of the professional skill which such an examination requires, but if each person interested subscribes his annual fee, then he may command the services of a competent engineer, and feel secure in the permanent efficiency of his arrangements.

"The Association has been slow in its growth, but, upon considering the disfavor with which it was received by the people of our city in the early portion of its existence, we have cause for congratulation that it is steadily increasing its good work, and gaining ground in the estimation of the public.

"Communications have been received from all parts of the country, requesting information in regard to the workings of the Association, and in several cities, societies, springing from our own, have been formed, and are now in successful operation.

"Owing to the advantageous arrangement which this Association, as a corporate body, is enabled to make for the examination of water, many members have obtained an analysis, and, of the well waters examined, only one sample has been good water. Of the city water, two analyses have been made, one showing the water to be good, and the other, made during a season of continued drought, the water of the pond being low, and the sample unfiltered, resulting not so favorably.

"It is the desire of the Association to have an analysis of the city water made each month, for the space of one year, that the average condition of the water, which so many of us use, may be ascertained.

"The Association, in the exercise of its function of caring for the interests of its members, as also, 'to improve the sanitary condition, and consequent good repute of the city,' has sent several communications to the city authorities, and, although as a general thing these memorials have apparently been treated with indifference, yet they have served as food for thought, and so have not been without avail.

"During the past year, the public authorities have done much for the sanitary improvement of the city, and the present mayor, in his inaugural, impresses upon the City Council the importance of determined and energetic action in all that pertains to the public health. Let us hope that the advance already made may be continued, until Newport may justly have the reputation, at home and abroad, of being one of the most healthy cities in the world.

"But do not leave all the work and responsibility to the city authorities. Each one of us is responsible for the sanitary condition of his own premises, and no one has a right to rest in his efforts until he has done all that is possible to secure the continued good health of all within his dwelling.

"At the outset the expenses of the Association required an entrance fee of six and ten dollars. This has been reduced to three dollars for permanent residents of Newport and five dollars for those who occupy their dwellings during a portion of the year only, 'this difference being based upon the fact that premises continuously occupied are more likely to be kept in good order, and therefore to require less rigid and expensive examination.'

"No one need hesitate, therefore, on account of the expense, to subscribe to the Association. Let each householder obtain a yearly report as to the condition of his premises; if defects are found it would naturally be his wish to repair them, and if none exist he will feel contented in the assurance that there is nothing more he can do to preserve the life and health of his family."

At the present moment, December 1, 1880, the number of entries upon the list of the Association has increased to forty-one, each of them representing a dwelling-house that it is supposed is now in the best possible condition obtainable by skilled experts, free from all ordinary self-originating sanitary dangers to its inmates, and free from immediate chance of occasioning dangers to outside citizens. Could such be true of all the dwelling-houses in any city, the Utopia of sanitarians would be attained. In many instances, membership of the Association has been determined by the occurrence of disease in a family; in several of them, as yet, however, but few comparatively, through

the suggestion of the attending physician, wise enough to perceive that thereby his own efforts towards a cure would be materially aided, and his reputation as an honest and reliable adviser greatly increased—results, both of them, that have certainly been marked in regard to those Newport physicians in active practice who have thus acknowledged the necessity and advantage of such an association.

The faults detected, under these circumstances, by the inspecting engineer, have been serious; such, indeed, as to allow no possibility of doubt as to their relation of cause to effect in producing disease.

Soil pipes, both of iron and clay, were found cracked, or with pieces broken out at the joints, the defective portions having been concealed by the manner of placing the pipe.

Joints were found having no cement or solder whatever, while frequently they were merely plastered over, leaving spaces whence sewage escaped.

Joints were found so imperfectly closed that the rootlets of trees had entered, and by their growth entirely plugged the pipe, with the result of backward flow and leakage of sewage into and through the foundation wall of the house, with accumulation of the same under the cellar floor.

Soil pipes of vitrified clay were found with the joints reversed, so that at every interlocking there was an obstruction.

Soil pipes were found leaking directly into the well, poisoning its water, though to the taste it seemed excellent.

Soil pipes of clay, when they should have been of iron, in passing through foundation walls, were found broken, by frost or slight settling of the house.

Soil pipes were found with old fractures that had been plugged with wood, which in time had rotted away and allowed sewer-gas to escape.

Joints were frequently found filled with putty or friable cement instead of lead.

Direct communications were found between house and cesspool, with no intervening trap, detection being made through inspection alone, there having been no perceptible odor, although such must have been the state of things for more than a year.

Cesspools were constantly discovered in close proximity to wells, thus suggesting an examination of the well water, which, by the analyst of the Association, has rarely been found good in any portion of the city.

The inspections have revealed defects in sewerage in every case save one; and in this instance the furnace was found to take its air supply from the cellar, thus causing, in the attending physician's opinion, the slow healing of a surgical wound in one of the inmates of the house.

This list of faults actually found in the houses of the subscribers to the Newport Association might be largely increased. Similar instances, however, occur in the daily practice of every sanitary engineer. There is not a city, town or village represented by delegates to your own Association in which they do not exist.

And so with regard to the diseases whose causation has thus far been traced and absolutely proved in Newport—scarlet fever, typhoid,

and the like—and, what is far more frequent from such an origin than is generally supposed, the slow and unsatisfactory healing of wounds, and recovery, after surgical operations. Were every physician, when taking charge of a medical case or attending a confinement, and were every surgeon, when called to an accident, or when undertaking to perform an operation, only to insist, for his own reputation, if not for the good of his patient, that the house should be thoroughly examined and put into good sanitary order, the annual percentage of deaths would everywhere be wonderfully decreased.

In a public way, also, the Association has already effected much—all perhaps that, under the circumstances, could reasonably have been hoped. Newport is in every sense a place by itself. Its people, a large portion of the native and all the year resident portion at least, while in many ways admirable and most interesting to live among, are extremely old-fashioned, conservative, self-centred, and slow to be persuaded, even in matters of their own interest and directly affecting themselves. Each year a certain proportion of the aged die off; their children are more in harmony with progress. Could the summer residents, many of them the representative men of our great centres of civilization, but remain through the winter at Newport for only one single season, take a part in the municipal election in the early spring, and thus help to shape and enforce the ordinances under which the health and lives of themselves and their families are nominally protected, but in reality endangered, during their now temporary stay of but several months each year,—there would result an absolute change for the better in the general condition, the local laws, the public sentiment of the place. A sudden improvement of the kind is doubtless impossible; with each year, however, there is occurring a gradual approximation to the result desired.

Above all, there is needed a separate Board of Health, distinct from the aldermen, who now officially act as such, but who, however well-meaning they may be as individuals, are yet unfitted for such grave responsibilities by their lack of special training, the multiplicity of their other civic duties, and the fact that they are still chosen by wards, with their rival interests and jealousies, instead of by the city at large. To obtain the appointment of such a separate Board has from the outset been the constant endeavor of the Sanitary Association. A year ago, and in great measure through its repeated memorials to the city government, a so-called Advisory Board was appointed, consisting of three very competent persons, one of them a civil engineer, and the other two, physicians attached to the Newport Hospital. During the present year, the city election being publicly charged to have been controlled by money sent from Providence to affect the canvass for State officials, and this not having been contradicted, a reactionary city council was elected, which has failed as yet to even reappoint the Advisory Board, much less to form a permanent one, although a special act, enabling it to do so, had been passed by the State Assembly.

During the same period, the present year, gross derelictions of official duty, or at least instances of excessive timidity and inefficiency upon the part of the City Council have occurred, and against them

the Sanitary Protection Association has faithfully, but thus far vainly, protested. A vast piggery, horribly cared for, has been permitted in the neighborhood of the finest quarter of the city, in the face of an ordinance by which the keeping of swine was forbidden, and delicate persons have been made ill in consequence and compelled to leave the town. The private contractors for the removal of swill have, even in the hot season, made their calls or not, as suited their own convenience, although, by another city ordinance, or contract, their duties were clearly defined; while the filthy wagons of privy cleaners, both wagons and laborers being of the oldest-fashioned kind, have been allowed to poison the air, defile the streets, turn the stomachs of all who were not bestial people, and bring down maledictions upon mayor, aldermen and Common Council combined. These and such things, sooner or later, cannot fail to be amended. Meanwhile, and very justly, the reputation and the prosperity of Newport are materially injured. For one—and I am not alone in this matter—despite the attractions of Newport and its comparatively satisfactory climate, I have thus far declined to recommend families containing delicate members to come here for permanent residence. The natural conditions of the place are favorable for health and longevity. A good many of the past generation, exceptionally hard to kill and surviving as the fittest, have attained here a green old age; but within a very few years Newport has doubled its population, and consequently its sources of filth. So that until there exists a proper system of sewerage (as yet there is none at all); until the soil water is reduced at least to its natural level (as yet no provision has been made for the escape other than through the soil of an abundant aqueduct supply that is now in domestic use in all portions of the city); until the city has consented to have hydrants for fire and general sanitary purposes (as yet it refuses, though the aqueduct water is running under every street*); until many of the old cesspools that now contaminate the wells are filled up or removed; until the real estate agents are directed by city ordinance to furnish evidence, certified to by a competent inspector, that the houses they offer to strangers are safe to live in, and not mere death-traps like several already examined by the inspecting engineer of the Sanitary Association; and until, over and above all, there is here a permanent Board of Health, officials who will care for these and other sanitary matters systematically, and not as now at hap-hazard; it will be just as well for intending residents to wait a little longer, perhaps a year or two even, before purchasing an estate. The time will eventually arrive when people can in reality safely come here to live. To speed that time is at present one of the great objects of the Sanitary Protection Association.

* Since the New Orleans meeting, the hydrant question has been carried in the affirmative, after a very bitter and protracted contest.

THE MANAGEMENT OF CONTAGIOUS AND INFECTIOUS DISEASES IN MILWAUKEE.*

By O. W. Wight, A.M., M.D., of Milwaukee, Wis.

In response to an invitation by the President I have undertaken to explain, in the briefest way, my method of managing contagious and infectious diseases in the city of Milwaukee.

The city charter empowers the Commissioner of Health "to forbid and prevent all communication with any house or family infected with any contagious or pestilential disease, except by means of physicians and nurses."

The charter also requires "each and every practicing physician in the city of Milwaukee to report in writing to the Commissioner of Health every patient he shall have laboring under any pestilential, contagious or infectious disease within twenty-four hours after he shall ascertain or suspect the nature of such disease."

The charter also enables the Commissioner to prescribe the form of such reports and to issue general orders in regard to various matters pertaining to the public health.

A city ordinance provides that "It shall be the duty of the Commissioner of Health to cause a notice, printed or written in large letters, to be placed upon all the outside doors of any house in the city of Milwaukee, in which any person may be affected or sick with smallpox, scarlet fever or diphtheria, upon which shall be written or printed the name of such disease; and such notice shall remain upon such house until the case shall cease to exist, and such house shall have been thoroughly disinfected; and if any person or persons shall deface, alter, mutilate, destroy or tear down such notice, without permission of the Commissioner of Health, such person or persons shall be liable for each offense to pay a fine of not less than twenty-five nor more than fifty dollars; and the occupant of any house upon which such notice shall be placed or posted, as aforesaid, shall be held responsible for the removal of the same, and if the same shall be removed without the permission of the Commissioner of Health, such occupant shall be subject to the like fine of not less than $25 nor more than $50, unless he shall notify the Commissioner of Health within twenty-four hours after the removal of the said notice."

The ordinance further provides that "when from current rumors or from any other reason a suspicion exists" that such diseases prevail in any family or household, "it shall be the duty of the Commissioner of Health to ascertain personally whether such is the case," and to enforce the law.

At the beginning of my administration, in the spring of 1878, I issued a circular to all the practitioners in the city, notifying them that the law requiring them to report cases of contagious and infectious diseases within twenty-four hours would be strictly enforced. Half a dozen prompt prosecutions convinced the profession that the Health

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*Read before American Public Health Association, New Orleans, Dec. 9, 1880.

Department was in earnest. One quack, unable to give bail, lay in jail till the day of his trial. One haughty and fashionable "doctor" was driven on the witness stand, under cross-examination to swear that he had no diploma and was a mere pretender.

Physicians in the city are gratuitously furnished with postal-cards, on the backs of which is a blank to be filled, showing the name of the patient in full, sex, nationality of parents, patient's birthplace, number and street, ward, age, married or single, disease and date. It requires but a brief time to fill out this blank at the bedside. The postal-card can then be dropped into the first letter-box which the physician passes after leaving the house, and it is sure to reach the health officer within a few hours.

The following is the form of this blank:

REPORT OF SICK CASES.

Name of Patient in full.	Sex.	Parents' Nationality.	Patient's Birthplace.
1			
2			
3			

No. and Street Continued.	Ward.	Age.	Single or Married.	Disease.
1				
2				
3				

Dated.....1880.....

Maximum penalty for neglect to make daily report to the Commissioners of Health, $250.

When the card reaches the Health Office the Commissioner writes upon its margin the name of the Assistant Medical Officer of Health in whose district the case may be located, and at the same time fills out and signs the following order:

No.....

HEALTH DEPARTMENT OF THE CITY OF MILWAUKEE,
Milwaukee....., ..., 188..

To....., M.D., Assistant Medical Officer of Health:

It having been reported to this office that there is infectious disease, to wit: ....., in the house known as No..... Street, ...ward, you will proceed without delay to placard said house according to the requirements of law, and at the same time to leave with the attendants the proper circular issued from this office for the sanitary management of said disease; to ascertain the number of persons exposed and the amount of exposure; to make diligent inquiry as to the contagious or other origin of the disease at that place; to make a careful personal examination of the sanitary condition of the premises and surroundings, and to make a written

report to the Commissioner of Health on all the points above indicated, with such other suggestions as you may think advisable. The examiner will not, by word, look, or act, interfere with the practice of the attending physician.

....M.D.,
Commissioner of Health.

The card and the order are passed to the secretary for registration and indexing. Twice daily the assistant medical officers report to the Commissioner for duty when they receive these cards and orders, and hasten to placard houses as directed.

The placard is eleven by fourteen inches in size. The small-pox placard is printed in large black letters on a bright yellow ground, the scarlet fever on a red, and the diphtheria on a lead-colored ground. On the top of the placard is the name of the disease in the largest possible letters, under which is the following warning: "$25 to $50 fine for removing this notice without authority from the Commissioner of Health. If removed, occupant of house must report to health office within twenty-four hours, under the same penalty." On the lower half of the placard the same thing is repeated in German, as about one-half the population are of that nationality.

At the time of placarding the house the assistant medical officer makes a sanitary inspection of the premises and reports in writing. His report, the order and the card, already mentioned, are pinned together and placed on the desk of the Health Commissioner for examination and approval. Such reports not infrequently give rise to additional orders to occupants or owners of the premises to clean vaults, fill up or drain low grounds, remove manure heaps or other filth; to empty and cleanse foul cisterns; to close up polluted wells; to overhaul defective plumbing; to make connections with the public sewer, for the purpose of safely removing slops, wash-water and other liquids, etc.; all of which pertains to another branch of the administrative sanitary work of the department. These reports of the assistant medical officers are numbered, indexed and filed away by the secretary for future reference. In time they will accumulate sufficiently to form the basis of some important statistical generalizations.

As often as reports of contagious cases come in from the city practitioners, notice thereof is immediately sent by means of postal-card blanks to the public and private schools in that neighborhood, the teachers of which are under orders not to admit pupils from infected houses under penalty of prompt prosecution in the Criminal Court. The same notice is also sent to the public library.

When a case of contagious disease recovers, the attending physician usually sends notice to the health office, although he is not obliged by law to do so. If he neglects to perform this service the family is sure to give him a sinister blessing, for the placard then remains on the door for a month, when it is looked after by the health department. Some of the doctors, to please their patrons, have reported recovery suspiciously early, in which case a visitation is made by the Health Commissioner or one of his medical assistants, and, if suspicion is verified, a severe rebuke is administered to the practitioner who dares to trifle with the public safety. Burke, who mur-

dered his fellow-creatures, in order to sell their bodies for dissection, was a Christian and a gentleman in comparison with the medical fiend who connives at the spread of contagious disease in order to increase his practice.

When a case of infectious disease terminates, by recovery or death, a trained person is sent from the health office to disinfect the house and take down the placard. Disinfecting is done by the approved process of burning sulphur in the rooms, closed as tightly as possible. A reliable and careful man is employed for that special purpose.

Public funerals are strictly prohibited in cases of death by contagious diseases. All the undertakers and clergyman in the city are under stringent orders to this end. Two or three threats of arrest were sufficient to enforce the orders. Funerals, in such cases, are now quietly conducted at the homes of the deceased, and no young person is allowed to act as pall-bearer. The transition is very great in a city where, four years ago, small-pox funerals were held in churches. The enlightened majority of the clergy are entitled to credit for efficient aid in this part of the sanitary work.

Railroad officials, expressmen, public carriers and all other persons are forbidden to bring to Milwaukee any person laboring under an infectious disease, or the remains of any persons having died of such a disease. There have been only two violations of this regulation in as many years. In one case a man brought clandestinely at night the remains of his child, deceased with scarlet fever, from a neighboring city. The imperative necessity of getting a burial permit from the health office compelled the undertaker to reveal his employer, and the man fled from the cemetery to escape the sheriff. In the other case, a railroad train from Chicago was arrested at the city limits and a whole funeral cortege put off, and ordered to take a suburban road to the extra-mural place of burial. These examples have been enough, and nobody seems desirous of repeating the experiment.

The circulars left with families by the assistant medical officers, at the time of placarding their houses, give pretty full directions for the hygienic management of the different infectious diseases. These circulars have been compiled from the best sources. For example, that concerning scarlet fever is in great part a copy of the excellent circular issued by the Massachusetts State Board of Health. In this way useful information concerning infectious diseases is diffused among the people. A family afflicted with a contagious malady is generally in a mood to receive such information and profit by it.

In dealing with small-pox, vaccination of all exposed persons is added to the procedure already described. In fact, there has not been a case of small-pox in Milwaukee since two years ago last July. When I took charge of the health office of the city, in the spring of 1878, I found small-pox in half a dozen different localities. It seemed determined to linger, till I made use of the extraordinary power conferred on the department by the Legislature of the State in the municipal charter, "to forbid and prevent all communication with any house or family infected with any contagious or pestilential diseases, except by means of physicians and nurses." By such a rigid system of domiciliary quarantine the foul disease was "stamped out," and has not returned.

The advantages of the system may be briefly stated :

1. It enables the health department, and the public through the health department, to know every day in the year the exact number of cases of infectious diseases in the city and their precise location. Rumor and sensational exaggeration in regard to the prevalence of contagious maladies, which are liable to alarm the people needlessly and to interfere with the pursuits of life, can then be corrected by facts. And the truth of a violent epidemic cannot be suppressed in the interest of commerce to the criminal endangering of the outside world.

2. The exact percentage of mortality is constantly known, revealing the severity or mildness of an epidemic.

3. The system affords especial means of studying the conditions under which contagious diseases flourish, or to what extent they are influenced by sanitary surroundings.

4. It diminishes the spread of contagious diseases by protecting large congregations of children in schools from the presence of those bearing infection in their persons or clothes; by preventing exposure of the living at public funerals; by revealing to all who can see and read the places where such diseases may be caught, and by destroying the lingering germs of contagion in sick rooms by means of thorough disinfection. My experience convinces me that a community will give a wide berth to small-pox, scarlet fever or diphtheria if you will only let them know where it is. I have frequently seen quite small children cross over to the other side of the street when approaching a house on the door of which was placed a placard revealing the existence of contagious disease within. It is wicked to conceal from God's little ones the fountains of infectious suffering and death.

The difficulties of carrying out the system are considerable, but not insuperable.

1. While the majority of educated physicians are ready to co-operate with the health authority in carrying out any reasonable system of protecting the public from contagious diseases, the negligence of many and the perversity of a few must be overcome by the unflinching execution of law. To the credit of the profession in Milwaukee it must be said that no one has raised the question of fees for reporting contagious diseases to the health office. An unseemly discussion of that question is now going on in Great Britain. The medical practitioner depends upon the patronage of the public, and should be willing to do for the public at large a service that costs very little time and trouble, and is attended with no expense. It is a fortunate feature of the law that it requires the attending physician to report a contagious disease as soon as it is suspected. For that reason the public receives the benefit of a doubt. The necessity of reporting to the health office all deaths, with the causes, in order to get a permit to bury, puts the doctor on his good behavior. A few attempts to return croup for diphtheria, spotted fever for scarlatina, etc., have been met with an order for a coroner's inquest. Inability to make a diagnosis has sometimes been urged as an excuse by delinquent quacks, but one or two criminal trials soon revealed to them that the responsibilities of assumed knowledge cannot be avoided by a plea of ignorance. In some instances doctors have prematurely reported recov-

ery. The law of duration in contagious diseases is too well known to allow such heedlessness to escape notice and rebuke. It is sometimes disagreeable to supplement the mental and moral defects of a portion of the profession by the terror of criminal law, but faithful sanitary administration requires it.

2. At first the people objected to having their houses placarded, as a violation of personal liberty. A little argument convinced reasonable citizens that no man has the natural or acquired right to expose his neighbors to deadly contagious disease by concealing it in his own house. Personal liberty to give small-pox to somebody else had better be abridged as soon as possible. Personal liberty to send scarlet fever into a school with your child is rather diabolical than beneficent. Personal liberty to infect a church with a diphtheria corpse is tempting Providence to start an epidemic. But many were beyond the reach of argument. A fortunate accident of legislation solved the problem. The alternative was placed before them of quietly submitting to the placarding process, as provided by city ordinance, or of being subjected to absolute quarantine in their houses, as provided in the charter. A law-abiding community submitted, and to-day the system of placarding, if it were left to an election, would receive an overwhelming majority of votes in its favor. Experience proves its value in many ways to the citizen. He knows and feels that, by reason of it, his family is more secure against diseases that cost money, anxiety and sorrow.

The defects of the system are already apparent to educated sanitarians:

1. So far as small-pox is concerned, proper vaccination and revaccination at suitable ages should be universal and compulsory. I am sorry to say that, in this respect, the sanitary code of Milwaukee is defective. Without vaccination, suppression of the disease allows the greater accumulation of material for the conflagration of an epidemic, that sooner or later may get under way and defy all control. Every escape from scarlet fever is a positive gain, for susceptibility to the disease decreases with age. Diphtheria should be suppressed all the time, for one attack does not secure immunity in the future.

2. The efficiency of the system depends to a great extent on the willing or enforced co-operation of the medical profession. Just so far as the profession falls short of an ideal standard must the system fail to reach its ideal value, however well it may be administered.

The system in Milwaukee is supplemented, as it should be, by a pest-house, to which the sick with contagious diseases, who have no homes, can be taken. With an efficient system of placarding and isolation, it is more economic, more humane, if not safer, to leave patients who have homes under the care of their families and friends. However excellent a hospital and its service may be, households are unwilling to give up any of their sick members to be nursed by unknown hands, in a strange place. To force away children from parents, from brothers and sisters, and parents from children and from one another, for the purpose of isolating infectious disease, exposes the public by transportation of the afflicted, diminishes the chances of recovery, outrages the unreasoning affections, and invades the sanctity of home. Sanitation must reckon with the unalterable in-

stincts of humanity and restrain itself within the boundaries of reasonable endeavor.

Therefore, in my judgment, the isolation of contagious and infectious diseases in the family, which is the unit of our political society and Christian civilization, is wisest and best. After long administrative training we shall get the willing co-operation of households and their chosen physicians. The day will come when exposure of others to our diseases will be recognized as a crime, the punishment of which will be demanded by the public conscience.

In the meantime we must combat superstition, diffuse rational knowledge, and protect the people against pestilence by the simplest and most effective means at our command, winning confidence by patient, kindly instruction, only using repression and the lash of law when we must.

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Tobacco—A Parable.—The following we cut from a California paper more than a year ago. There is more truth in it than poetry for the young:

Then shall the kingdom of Satan be likened to a grain of tobacco seed; which, though exceedingly small, being cast into the ground grew, and became a great plant, and spread its leaves rank and broad, so that huge and vile worms formed a habitation thereon. And it came to pass, in the course of time, that the son of man looked upon it, and thought it beautiful to look upon, and much to be desired to make lads look big and manly. So they put forth their hands and did chew thereof. And some it made sick, and others to vomit most filthily. And it farther came to pass that those who chewed it became weak and unmanly, and said we are enslaved, and can't cease from chewing it. And the mouths of all that were enslaved became foul; and they were seized with a violent spitting; and they did spit, even in ladies' parlors, and in the house of the Lord of Hosts. And the saints of the Most High were greatly plagued thereby. And in the course of time it came also to pass that others snuffed it; and they were taken suddenly with fits, and they did sneeze with a great and mighty sneeze, insomuch that their eyes filled with tears, and they did look exceedingly silly. And yet others cunningly wrought the leaves thereof into rolls, and did set fire to the one end thereof, and did suck vehemently at the other end thereof, and did look very grave and calf-like; and the smoke of their torment ascended up forever and forever.

And the cultivation thereof became a great and mighty business in the earth; and the merchantmen waxed rich by the commerce thereof. And it came to pass that the saints of the Most High defiled themselves therewith; even the poor who could not buy shoes, nor bread, nor books for their little ones, spent their money for it. And the Lord was greatly displeased therewith, and said: "Wherefore this waste; and why do these little ones lack bread and shoes and books? Turn now your fields into corn and wheat; and put this evil thing far from you; and be separate, and defile not yourselves any more; and I will bless you and cause my face to shine on you."

But with one accord they all exclaimed:

"We cannot cease from chewing, snuffing and puffing—we are slaves."—*Christian Secretary.*

EDUCATION IN THE UNITED STATES.

Abstract of the report of HON. JOHN EATON, U. S. Commissioner of Education for the year 1878.

In submitting his ninth annual report the Commissioner refers to the financial depression of the previous years, whose disturbing influence has been felt in educational interests through the year covered by the report. He points out also the perils public education has encountered from the conflict of sentiment with reference to certain features of our systems, and sets forth, in brief, the work accomplished by the office during this first decade of its history in supplying exact and complete knowledge of the educational condition of all sections of our country.

The total school population in the States for 1878 is 14,418,923; number enrolled in public schools, 9,294,316; average daily attendance, 5,093,298, seven States not reporting. The school population of the Territories is 157,260; number enrolled in public schools, 78,879; average daily attendance in the five Territories reporting this item, 38,115.

The total number of teachers in the States was 269,132; in the Territories, 2,012, Idaho not reporting. The average salaries of teachers are reported from all the States and Territories except Florida, Georgia, Idaho and New Mexico. The wages of men vary from $28.22 a month in South Carolina to $106 in Nevada; the wages of women, from $15.92 in Maine to $84 in Nevada; the average wages of teachers of both sexes is $17.44 in Alabama and $71.56 in Wyoming. In Maryland, Mississippi, and Indian Territory the salary of males and females is the same. The greatest difference between the salaries of males and females is in Massachusetts, where the former receive $75.64; the latter, $33.04.

A brief summary of the educational condition of the several States and Territories is given as follows:

Maine.—As in several preceding years, the number of children entitled to instruction in the public schools fell off here once again in 1878, the diminution being 2,620 this time. Still, doing what could be done for the lessened number to be taught, the people kept up the full teaching force, adding to it more persons trained in normal schools, and thus so increased the attractiveness of the instruction in the public system that, even with 278 fewer pupils on the rolls, the average attendance in winter schools increased by 1,287, and that in summer schools by 1,823. This was an increase on an increase, the average attendance of the year before having been greatly in advance of that of 1875–'76. It all goes to justify the statement of Superintendent Luce, that the general supervision of the schools was more efficient, the teaching better, and the public interest in education greater than in former years.

New Hampshire.—Here, with 367 more youth to be taught, there were 2,012 fewer enrolled in public schools, private and church

schools apparently absorbing these. But, notwithstanding this large diminution of enrollment, the average attendance in the public schools rose 489 above that of 1876–'77.

Vermont.—The statistics for 1877–'78, although much more meagre than in previous years, show an increase of 406 in youth of school age, and an additional enrollment of 1,658 public school pupils, or more than four times the reported increase of school population, while the daily average attendance advanced 3,320 beyond that of 1877, more than doubling the increase of enrollment.

Massachusetts.—Instead of a decrease in the youth of school age, as in 1876–'77, Massachusetts reports an increase of 827 such youth, with an additional enrollment of 2,349 and 5,743 more pupils in average attendance. An increase in the stringency of the truant laws and of those forbidding the employment of young children without schooling has probably had some effect in thus adding to the previous attendance, but a still better reason appears in the figures of the statistics, which show that 1,162 more teachers in the State system were from the normal schools.

Rhode Island.—The enumeration of the youth of school age here having been made only once in five years, the increase of youth entitled to instruction cannot be determined in the intermediate years. In 1877–'78 the enrollment of such youth in the public schools exceeded by 1,134 that of the preceding school year. The prevalence of epidemic diseases kept down the attendance, the average monthly belonging in the schools falling off 699 from even that of 1876–'77, and the average daily attendance still more; this, too, notwithstanding more extended grading of the schools and more general employment of normally trained teachers.

Connecticut.—With a school population 1,308 more than in 1876–'77, the total of different enrollments in the State schools increased 620, and the increase of average attendance both in summer and winter schools was about double the rise in enrollment.

New York.—Youth of school age, 23,022 more than in 1876–'77; enrolled in public schools, 8,337 more; in average daily attendance on these schools, 18,069 more, and this with an expenditure of $349,729 less upon the public system, the private schools showing a considerable falling off—such is substantially the statistical record as to New York State for the school year 1877–'78.

New Jersey.—As heretofore, steady advance in most respects marked the school system in 1877–'78, the increase of enrollment in the public schools exceeding by 137 the increase in children of school age, while the average attendance advanced 1,855 beyond the increased school population.

Pennsylvania.—Financial difficulties hindered progress here, the depression in the great mining and manufacturing interests of the State so greatly lessening receipts from taxes as to prevent the treasurer from issuing anything like the regular constitutional sum for public schools. Hence came reduction of teachers' pay and curtailment of expenditure wherever it could be curtailed. Still, there was progress: 29,368 more pupils entered the public schools; 28,223 more were in average attendance on them, and, with large additions also to private and church schools, the number not in school was dimin-

ished by 2,716. To meet increasing population, 42 new school districts were created and 284 more schools established, one-half of this increased number being graded, the whole number graded within the year reaching 151.

Delaware.—The increase of enrollment in the public schools, which began especially to show itself on the institution of a new system in 1875–'76, continued in 1877–'78, there being 1,432 more white pupils in the schools supported by the State for them, and 552 more colored pupils in the schools to which the taxes of the colored people are appropriated.

Maryland.—Again no census to indicate progress in school population. The enrollment in the State schools, however, increased by 5,998, and average daily attendance in these schools by 6,103 in 1877–'78.

Virginia.—In this State, as in Maryland and Pennsylvania, a falling off in receipts from the State treasury interfered seriously with the progress of the schools, which had for years previous been considerable. Hence, though there were 541 more whites enrolled and 135 more in average attendance, the diminution of enrollment in the colored schools, which seem to have especially suffered, was 3,271, that in average attendance, 1,514. The whole enrollment thus fell off 2,730; the whole average attendance, 1,379.

North Carolina exhibits increase at almost every point in the State school system; of 14,084 in youth of school age, of 26,333 in the enrollment in her schools, of 28,380 in the average attendance, of 500 in the school districts organized, of 714 in the schools taught, of 1,340 in the total of the teachers, and of $46,069 in the receipts for public schools.

South Carolina.—Progress here too is evident, the receipts for free schools having been $126,844 beyond those of 1876–'77, the enrollment of whites in them 7,674 beyond, and that of colored pupils 6,169 beyond, with 439 more schools, 468 more school-houses, 443 more teachers, and these apparently of better quality through examinations of greater strictness.

Georgia.—The report shows about 10,000 more youth of school age, taking the average of a quadrennial school census; 19,246 more of this age in public schools; 11,445 more in average daily attendance, with a growth of 497 in the number of free schools and of 580 in the number of teachers employed in them; this too, while private and church schools increased by ten in number, the teachers in them by 61, and their whole enrollment by 4,066.

Florida.—With no enumeration since 1876, this State cannot report the increase of school population in 1877–'78, but does report 5,828 more enrolled in her free schools; 2,151 more in average attendance daily; 105 more public schools, and 142 more teachers for them, with an addition of $11,569 to the receipts for schools, and of $13,600 to the principal of her available school fund.

Alabama.—The youth of school age were reported to be 798 more in number than in 1876–'77, and not only was this whole additional number gathered into the State schools, but, through fresh activity, growing out of new arrangements in the school system, more than twenty-one times that number, 17,142; 1,437 more colored pupils

were, on an average, present daily in the schools. The whites showed less zeal and constancy in their attendance, and through their irregularity there was a total falling off of 3,893 in the average daily attendance, notwithstanding the additional enrollment.

Mississippi.—Statistics of 1877–'78, though much less full than those of the preceding year, are unusually encouraging, showing 23,362 more youth entitled to school advantages, an addition of nearly twice this number (45,450) to those previously in the free schools, and of 18,677 to the average daily attendance.

Louisiana.—The extensive prevalence of yellow fever, in an unusually fatal form, during the summer and autumn of 1878 prevented in several parishes the making out of the reports for the preceding school year. From nine parishes there were no reports whatever; from two others next to none. Chiefly from this cause the enrollment in the public schools for 1877–'78 seems less by 8,171 than that of 1876–'77; although there was an increase of 6,905 in youth entitled to attend, and of 497 in the schools provided for them, with 475 more teachers.

Texas.—The number in the State free schools was 13,378 greater than in the year before, while 732 more schools were organized, 243 new school-houses built, 747 more teachers kept employed, and $245,843 more expended.

Arkansas.—Growing in population like her neighbor, Texas, Arkansas had in 1877–'78 a school population 12,908 beyond that of 1876–'77, but failed to gather this increase into her schools, the enrollment in these reaching less than one-sixth of the youth of school age and going only 377 further than the year before; this, too, notwithstanding the earnest efforts of an active superintendent to improve, extend and vitalize the system.

Kansas reports 33,701 more children of school age, 19,731 more enrolled in public schools, and 12,923 more in average daily attendance. Other statistics are: 271 additional school districts; 466 more sending in reports; 363 the increased number of school-houses—354 of them built during that year; school property enhanced in value $250,133.

Missouri.—*If the reported statistics were correct*, which the State Superintendent evidently doubts, the growth at some points here was wonderful: 134,970 in the number of youth of school age, 83,994 in the pupils on the public school lists, 352 in the number of school-houses, 543 in the number of the schools, 1,839 in the number of the teachers.

Kentucky.—The few figures given here for two years past afford a slender basis of comparison. Such as there are appear, on the whole, to indicate retrogression rather than advance: 13,777 more children to be taught, but 393 fewer on the State school rolls and 17,607 fewer in average attendance; 370 more teachers, but 59 fewer new school-houses in which to teach.

Tennessee.—The record here is extremely encouraging, the additional enrollment in the State schools including not only the full increase of youth of school age, 6,459, but more than five times this number, 33,509; the additional average daily attendance reaching also 29,932. The public schools, too, kept fairly up with this increase

of attendance, numbering 742 more than in 1876–'77, with 591 more teachers, and an additional expenditure of $103,160 on them. Private schools also increased somewhat in number and considerably in attendance, so that the total educational gain throughout the State was very noteworthy.

West Virginia.—Out of a school population increased by 16,926 children, there were enrolled in the free schools 4,852 more pupils, and 2,515 more were in average daily attendance.

Ohio.—The State of Ohio reported 14,715 more school children, 17,954 more actually in the schools, and 17,272 more continuously under instruction in 1877–'78 in the public schools, besides 12,354 additional in private and church schools, the number of the instructed gaining thus 15,593 on the number of illiterates within the year.

Michigan.—A moderate growth appears here of 7,362 in youth of school age, of 2,563 in enrollment in the public schools, and 1,676 in private ones, of 55 districts with graded schools and 92 with ungraded, of 81 in the number of school-houses, of 3,364 in the sittings thus provided, of 2 days in the average time of public schools, of 382 in the number of public school teachers, and of $67,709 in the receipts for support of schools.

Indiana.—With only 4,447 more educable youth in 1877–'78 than in the previous year, this State presents an additional enrollment of 13,809 pupils in her public schools, and an additional average daily attendance of 17,569, a gain of 9,362 in the former case, and of 13,122 in the latter on the illiteracy once complained of—this, too, without counting 1,210 more pupils enrolled in vacation private schools, or 485 more in average daily attendance on these schools.

Illinois.—Gain on the whole marked the public school history of 1877–'78 in this State also: 10,067 more children of school age, 12,244 more enrolled in public schools (a part of these last apparently absorbed from private schools, which lost 9,213).

Wisconsin.—Increasing only 304 in the number of children entitled to a training in her public schools, Wisconsin yet enrolled in these schools 6,232 more pupils, besides 2,102 instructed in other ways.

Minnesota.—A great advance in the number of school children meets us here in 1877–'78, the additional number reaching 33,066. But less than one-fifth of the addition shown by census was gathered into schools of any kind, while average attendance of the enrolled is not exhibited.

Iowa.—The increase of school population in this State was only 7,615, less than one-fourth of that in Minnesota. But here, almost the whole increase was gathered into public schools, the additional enrollment in them reaching 7,199. And what is better still, the greater part of this addition to the schools was held in average daily attendance, which increased 5,541 beyond that of 1876–'77.

Nebraska.—The progress upwards from three years of depression, which Superintendent Thompson thought he saw in 1877, had considerable interruption in 1878. Youth of school age were more numerous by 11,869; but only 6,011, or 60 per cent. of these, were drawn into the public schools, while no record indicates how many were retained there in average daily attendance.

Colorado.—The still unsettled and restless character of a large part of the Colorado population prevented the gathering into the State

schools of more than 2,556 additional scholars out of 4,861 more youth of school age, or about 56.7 per cent. of the increased material, with an additional average attendance of 1,558.

Nevada.—Of the 558 additional children of school age, 471 were in school, more than half of them in public schools. The average daily attendance diminished by 134, notwithstanding the increased enrollment.

California.—1877–'78 was an off-year in this State, where full reports are made biennially. The comparatively few statistics given show, however, a continuance of the progress which has usually marked the great Commonwealth of the western coast: 5,408 more youth of age for the free schools, 3,262 more of this age, and 11,411 more of all ages in such schools, and 5,157 more in daily average attendance.

In *Oregon*, 3,230 more school children only slightly increased the enrollment in the schools, but the additional average attendance, 7,077, was more than twice as great as the increase in school population.

THE TERRITORIES.

Alaska remained still unorganized in 1878, and had therefore no educational system.

Arizona reported 1,837 more youth enrolled in public schools and 310 more held to their studies in average daily attendance, with 6 more teachers.

Dakota had 1,155 more school children and gathered 719 more into her schools, which numbered 47 more than previously, under 76 more teachers.

The *District of Columbia* by a special census ascertained that there had been since 1870 an increase of 7,129 in the number of youth of school age, an average of about 1,000 for each year.

Idaho, with 914 additional youth of school age, gathered 801 more into the schools; organized 10 more school districts; had 11 more school-houses and at least 7 more schools.

The *Indian Territory* had 5,993 pupils of the five civilized tribes (497 more than in the previous year) enrolled in 198 schools, under 196 teachers. Of other tribes in that Territory and elsewhere there were 6,229 enrolled and 4,142 in average attendence in 168 schools, under 221 teachers; a considerable advance in the number of schools, of enrolled pupils, and of those regularly in attendance, but a decrease of 20 in the number of teachers. This, however, was more than made up by an increase of 100 in the missionaries, not classed as teachers, but often doing very effective teaching.

Montana, out of 754 more children of school age, enrolled 652 in her public schools and increased by 685 the average daily attendance in these schools, though the attendance on private schools diminished by 98.

New Mexica made no official report of them for 1878.

Utah reported 19 more districts schools, 19 more teachers in them, 1,931 more pupils out of 2,812 more of school age, 1,529 more in average daily attendance.

Washington, with 1,997 more children to be taught, reported 2,115 fewer in the public schools, without stating the average attendance.

Wyoming made for 1878 no statistical report; but one from the

Governor to the Secretary of the Interior declares the school system to be excellent.

In a table showing comparative population and enrollment of the white and colored races in the public schools of the recent slave States, are the following figures: School population, white, 3,608,654; colored, 1,578,930; enrollment, white, 2,034,946; colored, 675,150; total expenditure for both races, $11,760,251.

There are reported 34 normal schools for the instruction of the colored race, with 169 instructors and 5,236 students; 28 institutions for secondary instruction, with 111 instructors and 5,290 students; 15 universities and colleges, with 120 instructors and 1,620 students; 19 theological schools, with 49 instructors and 626 students; 3 schools of law, with 8 instructors and 44 students; 4 schools of medicine, with 17 instructors and 94 students; 2 schools for the deaf and dumb and the blind, with 26 teachers and 121 pupils; and 14,247 public schools, with 675,150 scholars. There are also 403 schools for colored pupils, having an enrollment of 20,675, in reporting free States, making total number of colored public schools 14,650 and total enrollment in the same 695,825. The Commissioner observes that the difficulties encountered in the progress of educating the colored race which originate from race prejudice are gradually disappearing; the whites are beginning to see that idleness, vice and crime are the inevitable results among the colored people of neglect, and that these evils decrease when the proper kind of training is afforded.

Houses for colored schools are generally needed, and there is also pressing need of competent teachers. There are encouraging evidences of improvement in school-houses and in the qualifications of teachers for white schools in the South.

The amount distributed from the Peabody fund to the States of the South from 1868 to 1878, inclusive, has been $1,061,700, of which the sum of $77,250 was disbursed in 1878. This was divided as follows: Virginia, $15,350; North Carolina, $4,500; South Carolina, $3,600; Georgia, $6,000; Florida, $3,900; Alabama, $1,100; Mississippi, $600; Louisiana, $8,000; Texas, $8,550; Arkansas, $6,000; Tennessee, $14,600; West Virginia, $5,050.

The wise administration of the trustees of the Peabody fund, through their very able agent, Dr. Barnas Sears, has recognized the changing demands of the South by applying the much needed aid of the fund more especially to the preparation of teachers. Aid is afforded to school journals to a limited extent, and teachers' institutes in several States have been assisted somewhat more; but most of the income has been expended in granting scholarships and in the establishment of a normal college at Nashville.

Universities and Colleges.—The total number of universities and colleges reported is 358, with 3,885 instructors and 57,987 pupils. In the preparatory departments of these institutions were 682 instructors, and 26,266 students; in the collegiate departments, 3,203 instructors and 30,368 students; unclassified, 1,353. They had 2,187,932 volumes in their libraries, and the value of their buildings, grounds and apparatus was $36,871,213; their productive funds $37,071,958; income from these funds, $2,548,324; receipts from tuition, $1,555,484; receipts from State appropriations, $622,577; aggregate amount of scholarship funds, $1,719,426.

Of the students in the preparatory departments, 18,481 are males, and 6,779 females; 6,576 are preparing for a classical course and 5,621 for a scientific course. In the collegiate departments, 15,803 (14,152 males and 1,651 females) are in classical course, and 3,893 (2,724 males and 1,169 females), are in scientific course.

The Commissioner presents a brief outline of the movement in colleges to satisfy the demand that the study of sciences and sociology be advanced to an equality with the classics and mathematics. Without sacrificing anything of the former curriculum, temporary provision for the new studies has been made in most instances by a system of electives.

Some have feared that in this readjustment of college courses the classics would be sacrificed; but the present tendency is toward greater thoroughness and a more extended range in classical studies; nor under the elective system is the number of students who take the modern in place of the classical course sufficiently large to create any apprehension as to the future influence of classical study.

The prevalent views on this subject are well represented in letters from Professor Hæckel of Jena, and Professor Zarncke of Leipzig, which are given in full in the report.

Schools of Science.—Of this class 76 schools, including the United States Naval and Military Academies, were reported to the Bureau. They numbered 809 instructors and 13,153 students. The comparative table for the years from 1870 to 1878, inclusive, shows this to be an increase in all particulars over the figures reported for any previous year. The increase above 1877 was in number of schools, 2; instructors, 28; students, 4,594.

Interesting facts are presented illustrating the practical advantage of these institutions to our industrial progress. The Commissioner adds that there has been marked advance in the general organization of these schools and in their preparation for efficient work in science and mechanics.

The Schools of Theology make the following exhibit: number reporting, 125; instructors, 577; students, 4,320; endowed professorships, 144; volumes in libraries, 655,202; value of grounds and buildings, $5,424,710; productive funds, $7,603,858.

Of Schools of Law there were 50 reporting in 1878, with 196 instructors and 3,012 students. Of these 703 had received a collegiate or scientific degree, and 1,162 graduated. The volumes in the libraries of these schools numbered 86,560; value of grounds and buildings, $51,000; productive funds, $168,247; income from them, $15,755; receipts from tuition, $102,734.

Schools of Medicine, Dentistry and *Pharmacy* reported during the year 106. These had 1,337 instructors and 11,830 students. The regular school of medicine and surgery reported 64 institutions, 915 instructors, 8,279 students, 2,506 graduates, 46,065 volumes in libraries, $1,685,250 in grounds, buildings and apparatus, $214,347 of productive funds, yielding an income of $13,186, and tuition receipts to the amount of $289,398. The eclectics reported 6 institutions, 51 instructors, 448 students, 211 graduates, 3,000 volumes in libraries, $161,000 in grounds, buildings and apparatus, and $8,960 receipts from tuition. The homœopathists reported 11 schools, 158 instructors, 1,215 students, 363 graduates, 39,800 volumes in libraries, $349,000

in grounds, buildings and apparatus, and $95,471 receipts from tuition fees.

The dental schools report as follows: number, 12; instructors, 161; students, 701; graduates, 218; volumes in libraries, 505; value of grounds, buildings, and apparatus, $68,000; receipts from tuition fees, $60,734.

The pharmaceutical schools number 13; instructors, 52; students, 1,187; graduates, 380; volumes in libraries, 5,175; value of grounds, buildings, and apparatus, $155,000; receipts from tuition fees, $25,487.

Public Libraries.—The summary of statistics of additional public libraries for 1878 presents the following totals: number of libraries established, 22; number of volumes, 24,621; volumes added during the year, 4,795; volumes issued during last library year, 101,621; amount of permanent fund, $15,000; yearly income, $5,213; expenditure, $7,458.

Adding the totals of the preceding summary to those of the statistics of 1877, 1876, and of the Special Report on Public Libraries published by this Bureau in 1876, we have the following aggregates for the 3,793 libraries now reported:

Total number of volumes	12,482,671
Total yearly additions (1,606 libraries reporting)	462,619
Total yearly use of books (823 libraries reporting)	9,308,403
Total amount of permanent fund (1,747 libraries report'g),	$6,776,497
Total amount of yearly income (928 libraries reporting).	1,404,326
Total yearly expenditures for books, periodicals, and bindings (852 libraries reporting)	589,731
Total yearly expenditures for salaries and incidental expenses (723 libraries reporting)	746,281

It should be noted, however, that the figures for these items are but approximately true for the libraries of the country, inasmuch as they do not include the very considerable increase of the 3,647 libraries embraced in the Special Report on Public Libraries, or the increase of the 124 libraries embraced in the Commissioner's reports for 1876 and 1877, from the dates thereof to the present time.

Schools for Feeble-Minded Youth.—11, with 422 instructors and employés; 1,981 inmates—786 females, 1,110 males, and 85 whose sex was not reported; number dismissed since opening, 1,073; income, $324,480; expenditure, $348,823.

Institutions for the Deaf and Dumb.—52, with 372 instructors, of whom 58 are semi-mutes; 6,036 pupils; 39,882 volumes in libraries, an increase of 1,477 during the year; property valued at $6,194,699; an income of $1,114,834 from State appropriations and $138,872 from tuition fees; and an expenditure of $1,258,999. The total number who have received instruction is 18,528, of whom 261 have become teachers.

Schools for the Blind, 30. These have 547 teachers; 157 blind employés and workmen; 2,214 pupils; 15,117 volumes in libraries; and grounds, buildings, and apparatus valued at $3,348,699. They expended during the year $626,927, of which sum $415,002 was received from State appropriations.

Reform Schools reported 68. These present the following figures: number of teachers, officers, and assistants—male, 543; female, 453;

number of commitments during the year, 9,083; number discharged, 8,742; present inmates: male, 10,870; female, 3,096; of whom 12,777 are white, and 1,174 colored, and 9,047 are natives, and 2,863 foreigners; volumes in libraries, 38,610; annual cost, $1,532,622; annual earnings, $313,136.

Schoolships.—A brief outline of the cruise of the schoolship St. Mary, of New York, is given; also, statements concerning the various training-ships of the country relative to the course of study, object, and method of training, &c.

Orphan Asylums, Industrial Schools, and Miscellaneous Charities.—The following totals appear in the summary of statistics of orphan asylums: number of asylums, 246; officers, teachers and assistants, 2.119; present inmates: males, 12,711; females, 10,418; number of volumes in libraries, 50,472; income, $2,183,208; expenditure, $1,875,419. There are 17 soldiers' orphans' homes, with 384 officers and teachers; 3,543 inmates; libraries containing 10,802 volumes; an income of $267,499, and an expenditure of $345,696. The infant asylums number 17, and report 175 officers, teachers and assistants; 3,095 inmates, an income of $439,127, and an expenditure of $457,809. Industrial schools to the number of 50 report 430 officers, teachers and assistants; 30,817 inmates; 9,812 volumes in libraries; an income of $434,848, and an expenditure of $438,292. Under miscellaneous charities are included 59 institutions, with 580 teachers, officers and assistants; 6,498 inmates; 9,953 volumes in libraries; an income of $551,744, and an expenditure of $586,711.

Educational Benefactions.—The total amount of educational benefactions is $3,103,289, which is distributed as follows: universities and colleges, $1,389,633; schools of science, $49,280; schools of theology, $397,852; schools of law, $100,000; schools of medicine, $18,562; institutions for the superior instruction of women, $241,820; preparatory schools, $97,191; institutions for secondary instruction, $759,817; institutions for the deaf and dumb, $49,134.

Educational Publications and Patents.—The educational publications of the year numbered 502, issued by 134 firms. The patents granted for inventions of school furniture and appliances numbered 86.

Next follows a summary of education in foreign countries, and an interesting account of the exhibit of the United States, especially at the Paris International Exposition of 1878. The awards to this country were 121; and most worthily the gold palm was conferred upon General Eaton, the accomplished commissioner, and author of the report before us.

An appendix to the report contains abstracts of the official reports of the school officers of States, Territories, and cities, 302 pages; statistical tables relating to education in the United States, 420 pages; and an index of 8 pages; total, including the report proper of the Commissioner (201 pages), 931 pages.

It has been our purpose in the foregoing abstract of this valuable report to so present the substance of it as to attract the largest amount of attention to the importance of the subject matter reported upon, and, if possible, to aid in so increasing the demand for such information, as to require at the hands of Congress such an elaboration in the sphere and support of the Bureau of Education, as will enable it to distribute such volumes a thousand fold.

THE CONTAGIOUS DISEASES ACTS OF GREAT BRITAIN.

ABSTRACT OF THE EVIDENCE BEFORE THE SELECT COMMITTEE OF THE HOUSE OF COMMONS ON THE CONTAGIOUS DISEASES (WOMEN) ACTS.

Prepared by J. Birbeck Nevins, M.D., London; one of the Witnesses before the Select Committee; President of the National Medical Association for the Repeal of the Contagious Diseases Acts.*

Evidence of Sir Wm. Muir, M.D., K.C.B., Director-General of the Army Medical Department, in favor of the Acts.

The commencement of Sir William Muir's evidence consisted in reading to the Committee the Tables contained in the Army Reports relating to primary venereal sores and gonorrhœa in the two sets of stations, the one under the Acts and the other not under them.

Sir Wm. Muir's evidence was so incomplete on many points, owing to the information not having been tabulated in the War Office, the Committee desired it to be properly arranged and laid before them at a subsequent date. This has now been done, and the results from his tables are given at the conclusion of his evidence.

Saving of strength in the army, claimed as the result of the C. D. Acts.—Quest.: "Have you made any estimate as to what is the saving per actual force in the army in consequence of these Acts?" Ans.: "If the same measure of success had been obtained at both groups of stations, about 190 soldiers more would have been in the ranks, instead of in hospital every day, taking no account of any additional saving effected in the avoidance of the secondary form of syphilis." Quest.: "In your opinion an addition of 190 men to the force of the army per day, up to 1875, is the extreme limit of the success produced by these Acts?" "Yes, up to 1875. I have not brought it down to the present day."—These answers are deserving of note. The extreme limit of success claimed for these Acts is 190 men per day—or one man in a regiment of 400 strong—"taking no account of the saving in secondary syphilis."

The more complete information supplied by Sir Wm. Muir's recent tables, shows the actual saving of strength, instead of the conjectural saving placed before the Committee.

The returns for 1878 showed an increase of primary venereal sores, in the 14 subjected stations, from 35 per 1,000 men in 1877 to 40 per 1,000 men in 1878, and an increase of gonorrhœa from 68 per 1,000 men in 1877 to 78 per 1,000 men in 1878. In the 14 unsubjected stations the increase was from 91 of primary venereal sores, and 117 of gonorrhœa in 1877, to 131 of primary sores and 121 of gonorrhœa in 1878.

The men *constantly in hospital* for primary venereal sores. The ratio per 1,000 men in the subjected stations was 4.46 in 1870—the first year of universal periodical examinations—and it was 2.61 in

* Continued from page 155.

1877. In 1878 it rose to 3.14 per 1,000. In the unsubjected districts the ratio constantly sick in 1870 was 9.74 per 1,000, which fell to 6.23 per 1,000 in 1877, and rose to 8.80 in 1878. (39.)

The reduction in the number of men constantly in hospital with primary venereal sores, in the protected districts, was therefore barely one man and a third (1.32) in a thousand men, after eight years of the most perfect working of the Acts in these 14 protected stations, and it was nearly one man (0.94) per 1,000 in the 14 unsubjected stations. *The difference in favor of the subjected stations*—assuming that difference to be due to the Acts—*amounts in the eight years of their complete operation to less than half a man per* 1,000.

The absence of benefit in gonorrhœa is acknowledged in his answers from 240 to 263.

As regards secondary syphilis, Sir Wm. Muir says, that "the proportions between secondary and primary syphilis had enormously changed," and that "the reduction had been in primary syphilis and not in secondary syphilis," and that the admissions into hospital for secondary disease were 24.77 per 1,000 men in 1866, before there were any Acts, and 26.64 per 1,000 men in 1878, although primary venereal sores in the same period had fallen from 87 to 40. "Therefore the proportion of secondary syphilis to primary has doubled during the operation of the Acts?" Ans.: "It has risen from 1 to 3 to 1 to 2 in round numbers." "The proportion of the true infecting sore is increased, seeing that the reduction has been in the non-infecting sore?" "Yes." "The reduction has been in the simple sore, not so much in the syphilitic sore, because there has been no reduction in the secondary syphilis?" Ans.: "Yes, that is the conclusion." "*The disease* to which the Acts referred was constitutional syphilis; that was the main object, was it not?" Ans.: "Yes, that is the real object after all." General Shute: "These statistics are rather curious, because, surely secondary disease ought, under improved medical treatment, to have decreased?" "Yes."

During the course of Sir Wm. Muir's evidence, a piece of information was given which appeared to take the committee by surprise, and which has certainly not been made prominently known through the army reports. This is that, in order to insure the success of the Acts as far as possible, every soldier, coming from an unsubjected station into a station under the Acts, is examined for venereal disease immediately upon entering the station, and if found to be diseased, is immediately sent into hospital, in order that there may be no chance of his diseasing the registered women, who in turn might disease other men. And the same precaution is adopted whenever a soldier returns into barracks after a two or three days' leave of absence. No such precaution is adopted when soldiers come into a station not under the Acts, but they are at liberty to infect as many women as they please, and no restraint is put upon them. Quest.: "Can you give me any reason why the rule should exist simply with reference to subjected stations?" Ans.: "It is to prevent men from importing disease into the district." Quest.: "Have you no objection to men importing disease into an unprotected district?" "It is difficult to answer that question."

Inspector General Lawson's evidence on this point:—"What was the

object of the examination?" (on coming into a protected station). Ans.: "To ascertain whether they have got disease upon them. There was *a great experiment going on*, and if they did not take means to prevent that experiment being interfered with by imported cases, they would only be half performing it." Quest.: "It is not so much the health of the people as the experiment of the Acts?" Ans.: "I look upon it as the experiment of the Acts." Quest.: "If the health of the general population of the country, independently of the soldiers, had been the intention of the Acts, will you tell me why the examination was not conducted in the unsubjected districts?" Ans.: "Simply it was not; that is all I have to say."

Sir William Muir is opposed to the periodical examination of soldiers, partly because he thinks they are of little use, but principally because he has so much difficulty in getting army surgeons at all, that he is afraid of increasing the difficulty by imposing upon them the disgusting duty of making such periodical examinations... General Shute: —"You seem to think that army surgeons were justified in feeling rather above making what was formerly insisted upon, namely, the weekly doctors' inspections, and you seem inclined to consider that being inspected might offend the modesty of the men?" "Yes; but I am speaking in the name of the profession; I am not speaking in my own name." "Then I want to ask you this:—you think that the civil surgeons may fairly be called upon to perform the more offensive duty of examining women; and that women, not more notoriously immoral than soldiers, should not object to it?" Ans.: "That is a matter of pounds, shillings, and pence."

Dr. Balfour's opinion of the same class of medical examiners. (Minutes of evidence, Royal Commission.) Quest. 16,118: "I think it is not quite fair to call upon the medical officers in the army to make a very disgusting inspection once a month. It is an inspection which at all times has been extremely unpopular among medical officers in the army... I believe I represent the feelings of 99 medical officers out of 100 when I say I consider it to be a most disgusting examination, and one which would be most unfairly put upon them if brought into force."—"But as to the unpleasantness to medical officers in the army of their being required to examine men, you would not say that it was more degrading for them to examine a man than to examine a woman, I suppose?" "No, I do not suppose it is; but they are not required to examine women."..."But there are a certain number of medical men who have that duty?" "Yes; but they have undertaken that duty for the sake of being paid. If they choose to sink their feelings for money, I have nothing whatever to say against it."

In an article upon the last Act of 1869, written shortly after its enactment, the *Medical Times and Gazette* thus warned the medical profession: "There is nothing which would tend more to deprive medicine of its rank of a respectable calling than the fact that practitioners should be found willing to lend themselves to the dirty work of examining prostitutes, in order to enable them to carry on their trade, and even, as has been proposed, instructing them in the art of injecting, so that they may sin with safety. If the heads of the profession, or the colleges, ever desire an opportunity of protecting their members from degredation, here is one."

ANALYSIS OF THE TABLES SUPPLIED BY SIR WM. MUIR TO THE SELECT COMMITTEE OF THE HOUSE OF COMMONS ON THE C. D. ACTS, SINCE THE PUBLICATION OF HIS FIRST SET OF TABLES IN THEIR FIRST REPORT IN 1879,—Second report, March, 1879, p. 55; Appendix No. 3; Tables A, B, C, D, E.

The loss of service in the whole army: The number of men constantly in hospital from venereal diseases of all kinds was lessening at a more rapid rate during the six years before the Acts than it has done during the twelve years since. So far as the Acts have been followed by any sanitary result, it has been a lessening of improvement. In 1860, the number constantly sick was 2,282 in 97,703 men, without Acts; in 1866 it was 1,136 in 70,292 men; in 1877, after eleven years of Acts, it was 837 in 92,143 men. When these are all reduced to the strength of the army in 1866 (70,292 men) for comparison, they show an average yearly improvement of 84.3 men during the six years without Acts, and an average yearly improvement of only 44.3 men during the eleven years with Acts. The year 1878 is left out on Sir William Muir's advice, because it was an exceptional and fallacious year, owing to the calling out of the reserves.

Invaliding: The number of men invalided from disease in the syphilitic group is 4.8 times as many, on the average of nineteen years, as from the "gonorrhœal group"—viz., 86 men yearly from the first, and 18 men yearly from the second group.

The proportion invalided from both put together is one man in 806.

Secondary Syphilis: The actual number of cases has slightly risen since 1866 (from 24.77 per 1,000 to 26.64), according to the Table put before the Select Committee by Sir Wm. Muir during his examination; but it has slightly fallen (from 27.66 per 1,000 to 26.61), according to some new tables which he has since put in, and upon which he has not been examined.

The average duration of each case during the twelve years since 1866 has risen one day per case—*i. e.*, from 26.66 days in 1866 to 27.68 days, on the average of the twelve years since the Acts.

The saving of efficiency has been nearly two and a half men in the whole army of 80,000, on the average of the twelve years since 1866, or a maximum of eight men on the average of the nine years of the most complete application of the Acts.

The proportion of secondary to primary sores is higher in the stations under the Acts than in those not under them. It was nearly alike (33 and 34) in the two sets of stations previous to the Acts, but it has risen during the nine years 1870–8 from 33 of secondary before the Acts, to 55 of secondary compared with 100 of primary in the 14 stations under the Acts; while it has only risen from 34 to 39.45 in the 14 non-subjected stations during the same period.

The amount of secondary disease in the 28 separate stations has no connection that can be discovered with the presence or absence of the Acts.

The amount in the same station, whether under the Acts or not, varies so continually and so largely, that no year bears any comparison with the year before or after it.

Primary venereal sores were falling at a more rapid rate before the Acts than they have done since. They were falling at the rate of 5.37

per cent. annually before the Acts; they have only fallen at the rate of 4.3 per cent. annually since the Acts—upon the amount remaining in 1866.

Average duration of the cases has risen from 26.1 days before the Acts, to 28.23 days since the Acts.

Saving of efficiency was 249 men in six years before the Acts, and only 247 men in eleven years after the Acts, upon an equal strength of 80,000 men.

Gonorrhœa: The average duration of the cases has fallen from 21.2 days for the seven years before the Acts, to 17.54 days during the twelve years since.

The saving of efficiency was 274 at the end of 6 years before the Acts, and there was a further saving of 268 men in twelve years after the Acts. The saving in 12 years with the Acts was less than the saving in 6 years without them.

(*To be continued.*)

———o———

Virulent Small-pox.—The "*Journal de Médecine et de Chirurgie Pratiques*," gives the following notice:

M. Landrieux had under his care, in the small-pox hospital, the nine Esquimaux recently arrived in Paris, for the Jardin d'acclimatation. These were taken with small-pox when passing through Germany, where many of their number died. Every one of those who reached Paris have died also. Some of them had the confluent hæmorrhagic form; others died before the eruption had time to make its appearance. At the autopsy a fatty infiltration of all the organs of the body was observed; this is supposed to be due to the habitual use of fish oil. None of the remedies given had the slightest effect on them—neither alcohol nor jaborandi caused any change. They were vaccinated as soon as they arrived, but the disease had already appeared.

The excessive severity of the small-pox in every one of these cases, without exception, is explained by the condition of the material in which the disease took root, and this explains the cause of the terrible disease when it finds its way into savage tribes which afford the same kind of soil for its development and propagation; small-pox mows them down as the reaper in autumn, and with the same certainty and the same rapidity.

They were not vaccinated until they reached the Belgian frontier. Could those rabid opponents of vaccination in Belgium, who have of late been literally inundating other countries, as well as their own, with pamphlets denouncing vaccination, been induced to take care of these cases of malignant small-pox, if they were thrown upon their hands? What would they have done with them or for them? Would it be any gratification to them to know that their fellow-beings were all in the same degree susceptible to the disease? What philanthropy!

Hæc ego non agitem! . . . . . .
Qui dedit ergo tribus patruis aconita, vehetur
Pensilibus plumis, atque illinc despiciat nos?

T. P. C.

Editor's Table.

Naval Hygiene.

The Sanitary and Statistical Report of the Surgeon-General of the Navy for the year 1879, which forms part of the annual report of the Secretary of the Navy, and in this instance a large part of it—comprising 353 of 537 pages of the whole volume—is especially noteworthy, as being in reality the first report emanating from the Naval Bureau of Medicine and Surgery worthily representing this important branch of the public service, and is a striking evidence of the comprehension, enterprise and professional spirit which Surgeon P. S. Wales brought into the Bureau of which he was made Chief.

The report is a complete exhibit of the daily movement of disease on the several naval stations and on board every vessel in commission, with special reports and commentaries by the medical officers in charge, more or less full according to the industry and zeal, or otherwise, of their respective authors, on the hygiene of the vessels and stations, and the sanitary topography of ports visited. Surely it would be hard to devise a stimulus to activity more likely to influence the indolent and indifferent officer than the opportunity which is here presented him to read and reflect upon his own meagre perfunctory report, in juxtaposition with the searching, interesting and instructive papers of his industrious colleagues.

The reduction of the returns of disease, death, invalidment and effective force to a statistical basis of *per thousand* is a marked improvement over percentage returns, since it harmonizes with the continental practice, and has the advantage of avoiding unnecessary decimal subdivision. Outline geographical maps of the naval stations, which precede the parts of the report assigned to each, materially aid the general reader in fixing the locality of the places described.

Another novel feature of the report is the *graphic* representation of the amounts of carbon dioxide and relative humidity of the atmosphere of the several ships, parallel with the percentage of sickness, showing a remarkable coincidence between the curves of sickness and aërial saturation, and completely sustain the position which the sanitary officers of the navy have maintained in their contest with commanding officers on the subject of *wet decks*, that atmospheric moisture is the most important factor in nautical disease. These records are stated to be the work of Surgeons J. H. Kidder and J. M. Flint,

attached to the Experimental, Chemical and Physiological Laboratory which Dr. WALES has established at Washington, in connection with the Bureau of Medicine and Surgery. The papers by these officers on the meteorological conditions causative of disease, which precede the station reports, will be found of very great interest to sanitarians.

Surgeon FLINT comes to the following conclusions from his thorough examination of the meteorological observations made in the navy, p. 46:

1. The condition of the atmosphere is only one among many influences affecting the health of men.
2. Its effect is more marked upon seafaring men than upon other classes, by reason, no doubt, of the exposures to which they are subjected, and the crowded state of the quarters which they occupy.
3. The amount of carbon dioxide, as recorded, seems to be no just measure of the condition of ventilation, or of the respirability of the air.
4. The humidity of the air is evidently an important factor in the causation of disease on ship-board, as shown by comparison of the lines of humidity and percentage of sick.

Surgeon KIDDER's report on the microscopy of the atmosphere embraces some novel investigations, of which the scope and character are indicated by the following outline of his method of procedure, p. 47:

1. Glass slips, clean or smeared with glycerine, and small glass disks were exposed to the air, both indoors and out, in different parts of the city of Washington. The solid matters deposited from the air or appearing upon the glass were examined from time to time through the summer, and in some cases photographed.
2. *a.* Large quantities of air were drawn by aspiration through small quantities of bottled and filtered distilled water contained in previously heated vessels.

b. Conical glass vessels washed with distilled water, but not wiped dry, and containing pounded ice, were exposed to the air both indoors and out. The moisture condensed from the air upon the outsides of these vessels was collected in small clean vials as it dropped from their apices.

c. Air was aspirated through bent glass tubes immersed in a mixture of pounded ice and salt until a small quantity of moisture had been collected in a bulb blown on the bend of the tube.

d. The moisture of the air was collected directly upon glass slips resting upon muslin bags containing ice.

The specimens resulting from the procedures *a* and *b* were subjected to qualitative chemical examination; those resulting from *c* and *d* were examined only by the microscope.

3. The elements identified by the preceding experiments as present in the air were combined with one another artificially, the resulting salts evaporated to dryness, and compared with crystals deposited spontaneously upon glass slips exposed to the air.
4. Glass tubes and small glass disks were made in sufficient number to be issued to the different ships and stations of the Navy, accompanied by instructions for their proper use.

Dr. KIDDER also has a paper on the physiological value of the naval ration, as contrasted with that of European navies.

The subject of *recruiting* has been given a prominent place in the report, a healthy and vigorous personnel being recognized as the essential basis of an efficient navy, and a valuable paper by Medical Director ALBERT L. GIHON is presented *in extenso*, detailing a series of original investigations by this officer on the subject of adolescent growth, made with the object of determining the average development of American boys of fourteen years of age and upwards. The following table gives the means of six different physical measurements, which he has deduced from the careful examination of the nude bodies of 6,129 lads, who were candidates for admission and pupils in the U. S. Naval Academy at Annapolis, p. 25:

TABLE D.—*Showing means for annual periods, and at completion of each year.*

AGES.	Weight.		Height.		Circumference of Thorax.		Expansion.		Vital Capacity.		Strength
	Pounds.		Inches.		Inches.		Inches.		Cubic Inches.	Hutchinson.	Pounds lifted.
From 13 to 14 years	83 5		53.7		27.8		2.5		157	160	155
At completion of 14th year		85.6		59.6		28.2	2.5		157		169
From 14 to 15 years	95.9		61.1		29.		2.3	2.5	185	182	188
At completion of 15th year		99.7		62.3		29.5	2.4		172		196
From 15 to 16 years	103.4		63.9		30.3		2.5		197	198	203
At completion of 16th year		111.9		64.6		30.9	2.5		203		214
From 16 to 17 years	113.2		65.4		31.5		2.6		210	214	220
At completion of 17th year		117.3		65.6		31.8	2.7	2.75	214		230
From 17 to 18 years	123.		65.4		32.3		2.8		219	222	236
At completion of 18th year		128.2		66.8		32.8	2.9		224		246
From 18 to 19 years	130.1		66.9		33.1		3.1		227	226	239
At completion of 19th year		134.		67.3		33.4	3.1		234		248
From 19 to 20 years	133.3		67.3		33.4		3.1		230	230	256
At completion of 20th year		134.1		67.4		33.4	3.	3.	234		275
From 20 to 21 years	135.7		67.4		33.8		3.1		231	230	276
At completion of 21st year		133.4		67.4		33.8	3.		233		278
From 21 to 22 years	135.3		67.4		33.9		3.		239	230	279
At completion of 22d year		134.7		67.3		33.8	3.1		234		279
From 22 to 23 years	136.9		67.6		34.		3.2	3.25	242	234	265
At completion of 23d year		136.2		67.5		33.6	3.5	3.5	237		276
From 23 to 27 years	139.		67.8		34.3		3.5		244	234	252

Dr. GIHON calls attention to the fact, that while these means exhibit a progressive gradation through adolescence towards maturity, it will not do to accept them as standards for the rejection of candidates who fall below them, since, as he demonstrates by other tables, among 1,000 lads there will be

Under mean weight, 387. Under mean height, 425. Under mean circ. thorax, 418.
At mean weight, 243. At mean height, 159. At mean circ. thorax, 199.
Over mean weight, 370. Over mean height, 416. Over mean circ. thorax, 383.

Only one-fourth or less actually approaching the mean, while the numbers below and above are about the same, the former rather in excess of the latter. He had, however, ascertained by the careful examination of the number of individuals at each month of age, where

weights differed by increments of ten pounds, and where heights and chest measures differed by one inch, that there was a marked regularity of divergence on either side of the means, and in Table F. (pp. 36–37), he has condensed these facts under three heads, denoting the numbers below, between and above certain evidently normal extremes of weight, height and circumference of thorax per each year, the whole number of observations being summarized per thousand as follows:

	Weight.	Height.	Circumference of Thorax.
Below Normal Minimum	41	51	38
Between Normal Extremes	906	899	925
Above Normal Maximum	53	50	37

At every age, therefore, he concludes, there is a latitude of from 50 to 60 pounds in weight, 7 to 9 inches in height, and 6 to 7 inches in circumference of thorax, within which over 900 of every 1,000 adolescents will be found, and it must be recognized as a fact that perfect health and bodily vigor, and the development peculiar to the type and temperament of the individual, are not inconsistent with an average departure below the mean of 25 pounds in weight, 4 inches in height, and 3 inches circumference of chest.

In a paper on the causes of rejection of lads, who were candidates for enlistment as apprentices, Dr. GIHON gives prominence to venereal disease and tobacco-poisoning, twenty per thousand having syphilis and gonorrhœa, and ten per thousand showing by their irritable hearts and anæmic appearances the influence of tobacco. Dr. GIHON'S anti-venereal crusade in the American Public Health Association we have already published. We are glad to see that he is no less earnest in calling attention to the pernicious effects of tobacco on the development of boys, and in protesting against the license to smoke recently awarded to cadets at the Naval Academy. The importance of this subject justifies a fuller consideration of it than present space will admit of. We therefore postpone it for special consideration in next number.

Fleet Surgeon A. C. GORGAS adds an interesting chapter to the literature of Yellow Fever. He calls attention to the remarkably successful results attending the treatment of that disease at the Maritime Hospital of Santa Isabel, at Jurujuba, Rio de Janeiro (p. 166).

"Of 1,405 cases, the percentage of deaths was 17.4. Considering that these cases were, in a large proportion, unacclimated foreigners, the proportion of deaths was very low. To this hospital are sent the cases of yellow fever occurring among the crews of the ships anchored in the harbor. 1,118 arrived at the hospital in the first period of the disease, of which number only 75 died, or 6.7 per centum; 274 in the second period, of which 156 died, or 56.95 per centum; and 13 were received moribund."

He further says: "From the official reports since 1873, inclusive, *there has been no month in these years in which deaths from yellow fever have not occurred*, and in but one of these years did the disease fail to become epidemic during the hot season." The local conditions are described as being very foul—the sewers in particular, for the want of water to flush them during droughts, and finally, when water does come on the occurrences of heavy rains, by the liberation of their effluvia—conditions, apparently, very analogous to those which obtain in New York and Brooklyn and some other American cities which nourish epidemics of one kind or another, except yellow fever for the lack of high temperature, all the year round.

The papers on the Medical Topography of Brooklyn, Norfolk and Mare Island, by Surgeons G. S. BEARDSLEY, THOMAS C. WALTON, and GEO. W. WOODS, that of Surgeon J. R. TRYON, of the Vandalia, and of Fleet Surgeon HENRY C. NELSON, of the South Pacific Station, are especially interesting and do credit to their authors.

Finally, the most difficult problem of Naval Hygiene, that of the Ventilation of Ships, appears to have been practically solved. The experimental apparatus introduced in the *Richmond*, accomplish such good results that the fleet surgeon, Medical Director F. M. GUNNELL, reports (p. 294):

On February 29, in this port (Hong Kong), after six weeks of rainy weather, the sick list presented but two cases of syphilis and one of contusion; not a case of catarrh nor any pulmonary affection nor rheumatism. This is the more remarkable because the *Richmond* is a single decked corvette, not suited for a flag-ship, with the additional numbers attached to the flag. She would be comfortable with 300 souls on board, and is over full with 366.

The Navy Department has every reason to be satisfied with this apparatus, which is heartily appreciated by all on board the vessel, and admired by all visitors. The nostrils do not discover the usual close and bilgy smells of the storerooms and the lower parts of the ship. I was recently in the fore-hold when the bilge scuttles were removed for the first time in four months. The floor was found dry and clean, and without marked odor, and the flame of a candle was strongly swayed in the direction of the aspirator. The fan was then making about 250 revolutions per minute; it is sometimes driven at 400 and even 600 revolutions. There is also a notable absence of cockroaches in the vessel below the spar-deck, while they are seen in the cabin and in the galley under the top-gallant forecastle. This is attributed to the strong currents of air produced by the ventilators.

The apparatus in operation on board the *Richmond* is essentially a rotary fan driven by the engine, exhausting the air through ducts communicating with every department, store-room and *cul-de-sac* in the vessel. "Very soon the *Brooklyn*, *Hartford* and *Lancaster* will be equipped with still more improved ventilating apparatus" (p. 45),

which it is ultimately proposed to introduce in every vessel in the Navy.

Surgeon-General WALES is to be congratulated on the results he has already attained, and he deserves the hearty thanks of the profession for the interesting volume he has issued from the Bureau. Like its forerunner, on Yellow Fever, of which the *Plymouth* outbreak was only the text, it is creditable both to himself and the corps of which he is chief, and deserves a place in every library. We are especially glad that so energetic a sanitarian is at the head of the Medical Corps, and congratulate him on his success in convincing the Secretary of the Navy that the ventilation of our men-of-war and other sanitary considerations, are essentials to the efficiency of that arm of the service.

The Annual Report of the Surgeon-General of the U. S. Army for 1880 represents an average mean strength of 22,100 white and 2,368 colored troops.

The ratios on sick list and deaths per 1,000, were, among the

White, for disease, 1,519; wounds and injuries, 251; average constantly sick, 45; deaths, 10—of these 6 per 1,000 were from disease, and 4 per 1,000 from wounds and injuries. Proportion of deaths to cases treated, from all causes, 1 to 179. Discharged on "Surgeon's Certificate of Disability," 33 per 1,000.

Colored, for disease, 1,512; wounds and injuries, 199; average constantly sick, 37; deaths, 19—of these 9 per 1,000 were from disease, and 10 per 1,000 from wounds and injuries. Proportion of deaths to cases treated, from all causes, 1 to 88. Discharged on "Surgeon's Certificate of Disability," 24 per 1,000.

The work performed in the Record and Pension Division, was greatly in excess of the previous year. The average number of demands for information annually during the previous ten years was 20,580; for 1879, 22,339, and for 1880, 39,241. Besides the work of searching under this head, 2,594 monthly reports of sick and wounded from various ports and stations have been received, consolidated and classified; 935 monthly meteorological reports received and transmitted to the Chief Signal Officer, and 947 reports of medical examinations of recruits received and filed.

Under the Division of Surgical Records, 6,020 cases of wounds, accidents and injuries, with 118 deaths; and 4,134 official reports of medical officers in charge of Post Hospitals or with detachments of troops against hostile Indians, were examined and tabulated.

To the 7,828 cases of injuries and operations reported in the army from the date of the publication of Circular 3, in 1871, to the close of the fiscal year, ending June 30, 1879, have been added in 1880, 1,034,

making a total of 8,862 cases. Besides which, through correspondence with medical officers of the the civil war, from reports of pension examiners, surgical journals and publications, and searches among the records of the Pension Office, additional data have been found of 3,808 cases of injuries.

The increase in the number of specimens in the Army Medical Museum during the year has been 76—the whole number being, at the date of the report, July 1, 7,023.

The Library has increased by the addition of 2,500 volumes and 3,500 pamphlets—now aggregating 51,500 volumes and 57,000 pamphlets. The work on the index catalogue is in steady progress. 1,500 copies of volume I. have been distributed. Volume II. is in press; and estimates forwarded for volumes III and IV. A new fire-proof building is urged as a necessity for the Museum and Library, now so important and valuable, and an estimate of $250,000 asked of Congress for that purpose, which, it is greatly to be regretted, was not granted. A financial statement of the office expenditure for hospital supplies and requirements for various special services are given: the whole comprehended in a pamphlet of only twenty-three pages—marvelous for its conciseness and clearness.

New York's Diseases and Death Rate.—*Typhus Fever* is the latest—but there is reason to fear not the last—of the prizes conferred on this community as the outcome of the recently accepted trade plans for continuous tenement house murder in New York—plans and laws which, by acts of omission, provided for the burning of people alive, in the manner described in THE SANITARIAN three months ago, and denounced two years ago as fraught with conditions perpetually promotive of disease and death—plans conceived, promoted and executed in the interest of, if not, indeed, by the landlords themselves, as a device to enable them to continue their speculations in human life, by *permission of the Board of Health!*

The tenement house law specifically provides that:

. . . "Any tenement house or room therein is so overcrowded that there shall be afforded less than six hundred cubic feet of air to each occupant of such building or room, the same board may, if it deem the same to be wise and necessary, issue an order requiring the number of occupants of such buildings or room to be reduced, so that the inmates thereof shall not exceed one person to each six hundred cubic feet of air space in such building or room." (*Sec.* 3, *Tenement House Act*, 1879.)

It is painfully evident that the said Board is standing in the shadow of the new "prize plans," the ostensible dust thrown into the eyes of

the people to divert attention from such *typhus nests* as the one recently discovered at the corner of Prince and Marion Streets; and there are hundreds of others no better, doubtless well known to the Board of Health, but to be discovered only as they hatch out typhus, or, it may be, other equally fatal disease called by another name.

The public school buildings are of a piece with the tenement houses—left to time, the eventual killer of all things, as the only remedy. No. 17, which the *Herald* has finally brought to judgment, is in the category of those described by THE SANITARIAN several years ago, and Grammar School No. 47, the identical one made famous by the engraving THE SANITARIAN gave of it (vol I., p. 193), showing the janitor's conversion of the ventilating shafts into a chicken coop and a pigeon roost: conditions and qualifications significant of the Board of Education's regard of the health of the school children. The buildings are commonly situated without any reference whatever to the healthfulness of locality—some of them erected on lots filled in with garbage, and without even a pretence at protection against the emanations of a filthy soil consequent upon warming the building. The arrangements for drinking water, clothes presses, closets and plumbing—in situation, material and quality—are all of the crudest and most dangerous kinds, in the highest degree promotive of filth diseases of every sort. And yet these, like the old tenement houses, are permitted by the Board of Health to await explosions—first one, and then another, because of the vested rights to murder people by tenement house landlords and co-ordinate branches of the public service! Such conditions are cumulative and proven by their fruits.

The mortality reported by Dr. Nagle, for the three months ending with December, 1880, was 8,068 against 6,474 for the corresponding period, 1879, and 1,740 above the average for the corresponding three months for the last nine years. The rate per 1,000 inhabitants was 26.75. More than 60 per cent. of the whole were from the following nine diseases: consumption, 1,266; pneumonia, 800; bronchitis, 433; diphtheria, 647; Bright's disease and nephritis, 404; croup, 379; scarlatina, 341; diarrhœal diseases, 299, and diseases of the heart, 300. The total number of deaths in tenement houses was 4,445; in houses containing less than four families, 2,021; the rest were in public institutions, boarding-houses, etc. The populations in the tenement houses and houses containing less than four families, are about equal, showing that the mortality in tenement houses is more than twice as great as in the non-tenement houses.

The records for the first quarter of the current year show a continued increase, there being 9,105, against 6,802 for the same quarter in 1880. Ratio per 1,000, 30.18.

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending March 12th, 1881. **Abbreviations:** c, consumption; a l d, acute lung diseases; s f, scarlet fever; ms, measles; w c, whooping cough; d-c, diphtheria and croup; t f, typhoid and typhus fevers; s p, small pox; y f, yellow fever; ch, cholera; dl d, diarrhœal diseases; c d, contagious diseases.

Atlanta, Ga., 37,421: 21; 7; 28.9.—a l d, 7.
Baltimore, Md., 332,190: 164; 67; 25.67.—c, 16; a l d, 18; d-c, 10.
Boston, Mass., 362,535: 173; 69; 24.9.—c, 23; a l d, 18; d-c, 24.
Brooklyn, N. Y., 566,689: 246; 108; 22.8.—c, 31; a l d, 29; d-c, 40.
Buffalo, N. Y., 155,137: 59; 22; 19.8.—c, 4; a l d, 8; d-c, 3.
Cambridge, Mass., 52,800: 15; 5; 14.7.—c, 4; a l d, 3; d-c, 1
Camden, N. J., 41,658: 18; 7; 22.5.—c, 6; a l d, 3; d-c, 1.
Charleston, S. C., 49,990: 28; 4; 29.2.—c, 5; a l d, 5; s f, 2.
Chicago, Ill., 503,304: 190; 79; 19.7.—c, 19; a l d, 22; d-c, 17; s p, 8.
Cincinnati, O., 255,708: 108; 35; 22.0.—c, 16; a l d, 17; d-c, 4; s f, 4.
Cleveland, O., 160,140: 71; —; 23.1.—c, 12; a l d, 6; d-c, 4; s f, 4.
Dayton, O., 38,677: 12; 5; 16.1.—c, 2; a l d, 1.
Dis. Columbia, 180,000: 95; 42; 27.4.—c, 19; a l d, 28.
Evansville, Ind., 29,280: 15; 8; 26.7.—
Fall River, Mass, 49,000: 26; 8; 27.7.—c, 4; a l d, 3.
Hudson Co., N. J., 187,950: 89; 32; 24.7.—c, 10; a l d, 17; d-c, 5.
Indianapolis, Ind., 75,074: 30; 9; 20.9.—c, 8; a l d, 6; d-c, 1.
Kansas City, Mo., 60,000: 16; 6; 13.9.—c, 4; a l d, 3.
Lawrence, Mass., 39,178: 10; 4; 13.3.—c, 3; t f, 2.
Louisville, Ky., 123,625: 41; 11; 17.3.—c, 6; a l d, 6.
Lowell, Mass., 59,485: 20; 5; 17.5.—c, 2; a l d, 4; t f, 4.
Lynn, Mass., 38,284: 11; 4; 15.0.—c, 3; a l d, 8.
Memphis, Tenn., 33,593: 24; 3; 31.2.—c, 6; a l d, 4; d-c, 2.
Milwaukee, 115,578: 39; 16; 17.5.—c, 5; a l d, 7; d-c, 2.
Mobile, Ala., 31,205: 9; 3; 15.0.—
Nashville, 43,461: 21; 2; 25.2.—c, 1; a l d, 4.
Newark, N. J., 136,400: 59; 26; 22.6.—c, 12; a l d, 12; d-c, 4.
New Haven, Conn., 62,882: 37; 10; 30.7.—c, 6; a l d, 11.
New Orleans, La., 216,140: 140; 42; 33.8.—c, 26; a l d, 26; s f, 6.
New York, 1,206,577: 750; 301; 32.4.—c, 122; a l d, 139; d-c, 63.
Omaha, Neb., 30,518: 8; 3; 13.7.—
Peoria, Ill., 34,850: 14; 5; 24.9.—
Philadelphia, Pa., 846,980: 401; 125; 24.7.—c. 65; a l d, 38; s p, 38.
Pittsburg, Pa., 156,381: 71; 29; 23.7.—c, 7; a l d, 10; s f, 7; t f, 3.
Portland, Me., 33,810: 5; 2; 7.10.—
Providence, R. I., 104,852: 39; 7; 19.4.—c, 7; a l d, 5; d-c, 3; s f, 3.
Richmond, Va., 63,803: 22; 4; 18.0.—c, 6; a l d, 5; t f, 2.
Rochester, N. Y., 89,363: ?
San Francisco, Cal., 233,956: 79; 18; 17.5.—c. 14; a l d, 8.
Savannah, Ga., 30,681: 17; 9; 28.9.—
Springfield, Mass., 33,340: 13; 5; 20.3.—
St. Louis, Mo., 350,522: 150; 53; 22.3.—c, 15; a l d, 20; d-c, 2.
Utica, N. Y., 33,913: 12; 4; 18.5.—
Wilmington, Del., 42,499: 17; 6; 20.9.—
Worcester, Mass., 58,295: 30; 13; 26.8.—c, 6.

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at latest weekly returns received.

Alexandria, Egypt, 220,000, Feb. 26, 138; 33.8.—t f, 6; dl d, 17.
Amsterdam, Holland, 326,203, Mar. 5, 160; 25.50.—t f, 2.
Antwerp, Belgium, 173,643, Feb. 19, 102; 30.6.—t f, 4; s p, 2.
Barcelona, Spain, 260,000, Mar. 5, 140; 28.0.—t f, 3; a l d, 20.
Belfast, Ireland, 174,412, Mar. 12, 106; 31.6.—t f, 4; a l d, 28.
Berlin, Germany, 1,123,577, Mar. 5, 492; 22.8.—d-c, 35; a l d, 31.
Birmingham, England, 400,680, Mar. 12, 163; 21.2.—w c, 8.
Bombay, India, 644,405, Feb. 15, 384; 31.0.—t f, 107.
Bremen, Germany, 112,200, Mar. 5, 41; 19.0.—a l d, 9.
Breslau, Germany, 273,000, Mar. 5, 186; 35.4.—a l d, 16; dl d, 6.
Bristol and Clifton, England, 217,185, Mar. 12, 87; 20.9.—s f, 6.
Brussels, Belgium, 406,638, Mar. 12, 203; 25.9.—a l d, 35; c, 37.
Bucharest, Roumania, 200,000, Mar. 5, 128; 33.2.—a l d, 24; dl d, 7.
Buda-Pesth, Hungary, 370,370, Mar. 5, 267; 37.3.—s p, 12; a l d, 31.
Calcutta, India, 429,535, Feb. 5, 281; 34.1.—t f, 83.
Christiania, Norway, 120,000, Mar. 5, 47; 20.3.—a l d, 12; w c, 3.
Copenhagen, Denmark, 235,254, Mar. 8, 99; 21.8.—a l d, 13.
Dresden, Saxony, 220,216, Mar. 5, 102; 24.1.—d-c, 9; a l d, 5.
Dublin, Ireland, 333,401, Mar. 5, 212; 33.1.—a l d, 46; t f, 10.
Edinburgh, 233,666, Mar. 5, 91; 20.2.—a l d, 17; t f, 4.
Genoa, Italy, 180,625, Mo. of Dec., 395; 27.8.—t f, 10.
Glasgow, Scotland, 601,266, Mar. 12, 283; 24.4.—a l d, 93; w c, 15.
Havana, Cuba, 195,437, Mar. 5, 156; 41.50.—s p, 31.
Lisbon, Portugal, 225,152, Dec. 18, 154; 35.6.—
Liverpool, England, 549,834, Mar. 12, 281; 26.7.—s f, 6; w c, 8.
Lyons, France, 342,815, Feb. 26, 170; 25.8.—a l d, 25; d-c, 5.
Madras, India, 397,552, Oct. 29, 299; 39.1.—s p, 13; "fevers," 54.
Malaga, Spain, 115,882, Mar. 6, 67; 30.0.—d-c, 6; a l d, 4.
Montreal, Canada, 135,000, Jan. 15, 63; 24.3.—
Munich, Germany, 230,000, Mar. 5, 147; 32.2.—dl d, 20; a l d, 15.
Paris, France, 1,988,806, Mar. 10, 1,287; 33.7.—a l d, 151; d-c, 58.
Rio de Janeiro, Brazil, 330,000, Jan. 15, 195; 30.8.—s p, 4; c d, 8.
Rome, Italy, 305,469, Feb. 19, 138; 23.4.—a l d, 47; d-c, 13; s p, 7.
Stockholm, Sweden, 169,429, Feb. 26, 96; 30.6.—a l d, 20; dl d, 6.
St. Petersburg, Rus., 669,741, Feb. 26, 655; 51.0.—a l d, 108; t f, 81.
Trieste, Austria, 128,295, Mar. 5, 102; 41.3.—a l d, 26; d-c, 4; dl d, 3.
Turin, Italy, 236,658, Feb. 19, 130; 27.6.—a l d, 51; d-c, 10; t f, 7.
Venice, Italy, 141,615, Mar. 5, 62; 22.7.—a l d, 22; d-c, 2.
Warsaw, Rus. Poland, 357,169, Jan. 22, 167; 24.4.—

Yellow Fever.—The *Revue d'Hygiene et de Police Sanitaire*, of February 20, reports the local conditions of Vera Cruz and Havana as being bad in the extreme, and the yellow fever on the increase in both places; and the *Independencia Medica* (of Mexico), March 1st, states that in Vera Cruz and vicinity, great quantities of organic matter exist in process of decomposition, and that notwithstanding an unusually severe winter, *vomito* has prevailed continuously, and is now on the increase. The *Unia Medica* (Rio de Janeiro), for January, publishes a recent letter from Guayaquil, which states that yellow

fever in that city is killing 50 persons a day. The *Gaceta Medica Catalana*, of January 16th, publishes an official notice of the 13th, that the quarantine of vessels from Senegal had been raised; there had been no case of yellow fever there since December 23d; but vessels arriving from ports between Senegal and Bathurst (included) were still in doubtful condition.

Disinfection by Heat.—It affords us much satisfaction to learn that the National Board of Health has had made a floating disinfecting apparatus by means of heat, to be used in connection with the inspection service on the Mississippi River. The principal features are a boiler, and a tank of sufficient capacity to hold all the ordinary bedding of a passenger packet, and subject it to a dry heat of 230°. The disinfecting apparatus is a cylindrical iron boiler well braced, and has been tested as to pressure. The float with the apparatus can be placed alongside a steamer, and the usual fittings used to connect with such a vessel's steam engine; or, if necessary, the steam apparatus of the float itself can be utilized.

The Medical Officer of Health's Report of the Port of London, for the half year ending June 30, 1880, gives the total number of vessels of all descriptions inspected 7,601; 244 vessels and 38 foul cargoes were required to be cleansed; 17 vessels altered in structure; 5 fumigated on account of infectious disease having occurred on board (one of typhoid fever and four of small-pox); 23 parcels of seamen's clothing disinfected, and 69 sick persons transferred to hospital.

The kinds of foul cargoes which had to be dealt with were: potatoes from Canada, damaged by salt water; and—the most offensive of all—manure street sweepings, refuse of glue factories, and "bones and what is known as fish manure," collected from ships running from various parts of London, and on the river craft.

In consequence of a death supposed to have been due to the emanations of the "spent" or "foul" lime of gas works, an investigation was had, which resulted in concluding that, although this substance was very offensive, evidence was wanting to show that it was unhealthy.

In two only of seven School-ships, containing altogether between two and three thousand pupils, were any cases of zymotic disease; in the one case scarlet fever, which was promptly stamped out, with but one death; in the other of typhoid fever, and without satisfactory evidence in regard to its origin. The numbers of cases and deaths are not stated.

Of the small-pox arrivals, every case was effectually quarantined, and vessels disinfected—"in no single case has the infection been conveyed."

As compared with the preceding six months, the number of vessels inspected was smaller, but the proportion of foul vessels, foul cargoes and sick persons was larger, the numbers being respectively for the six months ending

December 31, 1879: 7,898; 243; 49; 63.

June 30, 1880: 7,601; 244; 38; 69.

Instructions have recently been issued requiring the masters of all emigrant ships having any case of infectious disease on board, when in any part of the Thames, to communicate forthwith by telegram with the medical officer of the Port of London; and should such emigrant ship be below Woolwich, to also communicate with the medical officer of the hospital ship *Rhin*, off Gravesend, in order that the patient may be sent to the nearest hospital for infectious diseases as early as practicable.

Under the term "Infectious disease" are included small-pox, typhus, typhoid (enteric) fever, scarlatina, measles, erysipelas, diphtheria, cholera, yellow fever, plague.

"Sanitary Fragments."—Errata.—In the paper on this subject, March number; p. 101, 4th line from the top. Lat. 11° 23′ *N.*, should be Lat. 11° 23′ S.

P. 101, 8th line from the top, for the word "north," read south.

The American Medical Association.—The 32d Annual Session will be held in Richmond, Va., May 3–6, 1881. A member desiring to read a paper before any section should forward the paper or its *title* and *length* (not to exceed twenty minutes in reading) to the Chairman of the Committee of Arrangements at least one month before the meeting.—*By-laws.*

Committee of Arrangements—Dr. F. D. Cunningham, Chairman, Richmond, Va.

London International Medical and Sanitary Exhibition, initiated by the Executive Committee of the Parkes Museum of Hygiene, will be held on the occasion of the Meeting of the International Medical Congress of 1881, and will be open from July 16 to August 13.

The Exhibition will comprise everything that is of service for the *Prevention*, *Detection*, *Cure* and *Alleviation* of Disease, and will be divided into three Sections.

The Sanitary Section will Comprise:—Domestic and Hospital Architecture.—Planning, Construction, Decorative Materials.—Ventilation, Lighting and Warming.—Water Closets, Sinks, Baths, etc.—Sewerage and Drainage.—Water Supply and Filtration.—Health Resorts and Sanitaria.—Books, Diagrams, Models, etc.

Miscellaneous Section:—Applications of hygienic principles to Food

and Dietaries, Clothing, etc.—School Furniture and other articles more or less connected with the general purpose of the Exhibition.

The Exhibition will be held at South Kensington, space having been granted for it by the Royal Commissioners for the Exhibition of 1851.

Forms of Applications for space, and all particulars, may be had of the Secretary of the Exhibition Committee, *Parkes Museum of Hygiene, University College, London.* Office hours, 10 to 4, Saturdays, 10 to 2.

JOHN ERIC ERICHSEN, F.R.S., *Chairman of the Exhibition Committee.*
MARK H. JUDGE, *Secretary of the Exhibition Committee.*

The Sanitary Convention at Battle Creek, Mich., March 29–30.—Just as we go to press, too late for notice, we have received the *Battle Creek Daily Journal*, containing abstract of proceedings; will have notice in next, and probably some of the papers in full.

The Sanitary Council of Mississippi Valley meeting of April 20—notice for which was received just after April number had gone to press—will have probably taken important action in view of the present attitude of the Louisiana Board of Health, ere this number issues; a report may be expected in our next.

The National Association for the Protection of the Insane and the Prevention of Insanity is surely one of the most worthy objects which can engage the attention of medical men, and we are gratified to know, from the general favor expressed in the public prints, and the hearty concurrence of leading physicians and other persons eminent for the interest they are taking in the welfare of the most needy of all dependent people, the Association has made an auspicious beginning.

"It is desired to secure in each State some effective form of governmental supervision of the insane, both in and out of the hospitals and asylums, and to promote a scientific study of the subject in its various aspects—the causes, the treatment and prevention of insanity."
—MISS A. A. CHEVAILLIER, 10 Marble St., Boston, Mass., *Secretary.*

Chairs of Comfort, adjustable to any degree of reclining; and substantial

Physicians' Operating Chairs are always timely subjects for consideration. Of the former, every household needs one at least, for convenience in time of illness if at no other time; and of the latter, no physician's office can be complete without it. Moreover, to the former, an adjustable writing table is a wonderfully useful appendage for ministers, lawyers and doctors—and all the more if so substantially put together as to be entirely devoid of shaking. As eminently fulfilling all these conditions, we take pleasure in calling attention to those made by the Pittsburgh Adjustable Folding Chair Co., 23 E. 14th St., New York.

Higgins' German Laundry Soap.

To the Editor of THE SANITARIAN:

Allow me to express my gratification at the interest THE SANITARIAN has manifested in the importance of pure soaps, and particularly the article in the March number on the *Analysis of Soaps*. Pure soap is, indeed, of very much more importance in the household than most families consider, and I have no question that many of the hidden causes of disease are attributable to it. After a trial of several other sorts, with more or less dissatisfaction from a variety of faults, which I am now satisfied were due to impurity, I deem myself fortunate in having had my attention called to Higgins' German Laundry, which I have found especially excellent as a detergent for clothing and household use, and free from all irritating properties, leaving the skin soft and smooth, followed by no roughness or eruptions of any kind upon those who use it—very desirable qualities for a family soap.

BROOKLYN, *April 4th*, 1881. E. F. PECK, M.D.

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MENU.

Fried Salt Pork Three Times a Day.—The *Herald* reports:

"A New York journalist, who has for many years been afflicted with dyspepsia so that he could not eat even the most delicate fruits, recently visited Arizona, and found that he could eat fried salt pork three times a day."

Had he tried the same diet before going, possibly he would have fared quite as well. He might have required a few trips to Coney Island or Long Beach and back, or a daily walk before dinner from Printing House Square to his up-town home, to stimulate his appetite, when he would have found the same good effects from fried salt pork in New York as in Arizona. By "fried salt pork" we would be understood as recommending it or some other kind of food containing a sufficient amount of *digestible fat*. The difference between salt pork and bacon, in this respect, if equally well prepared, is a matter of taste, and with either one properly cooked and well made hot griddle cakes, daily, for breakfast, journalists would rarely find it necessary to seek a better climate than may be found within easy access to New York; or a diet which will better fortify them against the common dangers of city filth.

Fried salt pork or bacon, to be good, should be first simmered or parboiled in a sufficient quantity of water to dissolve out the excess of salt, and to make it tender, and then fried brown—*not* to a crisp. For some persons, a more delicate way is, after the parboiling, to turn the slices in wheaten flour batter, and then fry them.

"Delicate fruits" diet, particularly for breakfast, which ordinarily means abstinence from substantial fats, is the death of many journalists as well as other persons, whom journalists should teach to know

better. Restore the old fashioned "hog and hominy" to its wonted place, and there would be such a falling off in the death rate hereabouts, as would even astonish the keeper of the streets—so much better would people be able to withstand their vile emanations. In short, editors should teach the people in these latitudes that, in one way or another, every full grown man and woman, and every youth, requires about two ounces of some kind of fat daily, as a portion of his or her diet, and if not taken as food, the time is hastened when it has to be as medicine, to simply prolong—it may be for a year or two—a miserable existence with consumption or other fatal disease in consequence: "dyspepsia" and loss of fat being commonly the first admonitions. A journalist, or any other person in this latitude, who long neglects to take a due proportion of fatty food to maintain bodily temperature, will soon find himself growing lean, his system will live upon its interstitial fat—that which is distributed throughout the bodily tissues of healthy persons—and he will shortly begin to have dyspeptic symptoms, on account of the deficiency in his food to maintain healthy nutrition. And for this condition, it is unfortunately too often the case, medicine or moonshine is given in promotion of the danger. Fortunate, indeed, is it, if such persons can be dispossessed of their infatuations by a trip to Arizona, or anywhere else to restore them to a sense of their wants, and the wit to use them. Many persons who, from the cultivation of a vitiated taste for delicacies, or under the influence of bad advice, have lost the power of assimilating the fat of meats, may do much towards regaining the lost power by the use of well made "shortened" bread—bread made of dough to which lard or butter is added; or some of the preparations of ground wheat or Indian meal. Of this latter, *Johnny Cake* and *Cush* are particularly commendable.

Johnny Cake is made of coarse corn meal, mixed with boiling water and sufficient salt, shortened by the addition of lard. It should be well beaten or thoroughly stirred, and of such consistence as to be easily spread on a smooth board. Thus prepared, place it upright against proper supports on the hearth before the fire and bake it; when one side is baked, turn it on the board and bake the other, and when well done on both sides serve it hot.

Cush is coarse corn meal stirred in hot water to the consistence of a stiff paste with sufficient salt, and shortened with lard, the same as Johnny Cake, but instead of toasting before the fire, put the dough into a skillet over a hot fire, and stir constantly till done—about forty minutes: serve hot.

The use of butter and olive oil, both at table and in cookery, should be encouraged, especially for young persons, whose taste for fat should be assiduously cultivated.

Literature.

Wood's Library of Standard Medical Authors.—The first two volumes of the series for 1881 are :

A Treatise on Albuminuria, by W. Howship Dickinson, M.D., Cantab. Fellow of the Royal College of Physicians ; Physician to St. George's Hospital ; Senior Physician to the Hospital for Sick Children ; Corresponding Member of the Academy of Medicine of New York. Second edition. 8vo, pp. 312. New York : William Wood & Co.; and

A Treatise on the Materia Medica and Therapeutics of the Skin, by Henry G. Piffard, A.M., M.D., Professor of Dermatology, Medical Department of the University of the City of New York ; Surgeon to the Charity Hospital, etc. 8vo, pp. 351. New York : William Wood & Co.

The authors of these works, respectively, will at once be recognized by the profession as active workers in their spheres and standard authorities, eminently fitting to fulfill the conditions of this highly commendable enterprise of the publishers—the publishing of standard medical works in serial form at rates greatly reduced from what they would otherwise be. Moreover, it is with special gratification that we are enabled to state on assurance that in the reprint of foreign works in this series, the authors are duly remunerated ; and to specially note the admirable manner in which these works are gotten up, as evidence of the publishers' appreciation of the patronage received in this special enterprise, now in its third year. We can truly say, with emphasis, that which we took occasion to say of the enterprise at its inception—subscribers for such works have a rare opportunity for enriching their libraries, and few physicians can afford to let such opportunities pass without availing themselves of it. These volumes are supplied by subscription only. New York : William Wood & Co.

Denison's Rocky Mountain Health Resorts.*—The second edition of this excellent book in less than a year increases the good opinion we had of it from the first. It continues to be all we have heretofore said of it (THE SANITARIAN, Vol. VIII., p. 328), and we earnestly recommend it to all persons who are interested in the influence of climate, and particularly of high altitudes, on pulmonary diseases.

* —An analytical study of High Latitudes in relation to the arrest of chronic pulmonary disease. By Charles Denison, A.M., M.D., Reporter to the International Medical Congress, Philadelphia, 1876, on the "Influence of High Altitudes upon the Progress of Phthisis;" Author of "Reports on Climate and Consumption" to the American Medical Association, etc. 12mo., pp. vii-192, with charts and maps. *Second Edition.* Boston: Houghton, Mifflin & Co.

Transactions of the Medical Society of the State of North Carolina—27th Annual Report, 1880, pamphlet, pp. 144. This report comprehends as part of its minutes, an interesting brief of the work of the *State Board of Health*, by the Secretary, Dr. Thomas F. Wood, who urges especially the importance of registration and the organization of county and local Boards of Health as the most efficient means of securing it. The actual sanitary work accomplished has been almost wholly educational—the inculcation of elementary sanitary principles among the people by the diffusion of brief papers and reports among the people. Water analysis has engaged the attention of the board to some extent, and this work has served a good purpose in arresting the attention of many families to fruitful but remediable cause of sickness. Uniformity of post-mortem examinations in its medico-legal aspect, drainage, and the proper use of disinfectants, are also urged upon the attention of the Society as special subjects requiring its co-operation and support for the advancement of State Medicine.

Quarantine is the subject of a paper by Dr. E. A. Anderson, strongly advocating uniformity of laws under the control of the general government, and absolute. There are four papers on Practical Medicine and Surgery, and an interesting address on *Medical Science in Conflict with Materialism*, by Dr. Eugene Grissom.

Education : An International Magazine, bi-monthly, devoted to Science, Philosophy, Literature and Education, published by T. W. Bicknell, Boston, Mass., is among the most welcome of the new additions to our exchange list. At the time of this writing we have received but two numbers, III and IV, but these, from the celebrity of the contributors and the topics discussed, place this magazine at once in the front rank of periodical literature. The January–February number has for frontispiece a fine steel engraving of William T. Harris, LL.D. The leading article is on the *Four Centuries of Scotch Education*, by John Russell, F.E.I.S., F.R.H.S., London. The March–April number has for frontispiece a fine steel engraving of Thomas Sherwin, late Head-Master Boston English High School. The leading article is on the *British Race*, by Prof. F. H. Seeley, the distinguished author of *Ecce Homo*, and shows in a highly complimentary way to Americans that the fullest expression of the spirit of British life, education and civilization is to be found in our own country. $4.00 a year, 75 cents a number. Boston: New England Publishing Co.; New York: August Brentano.

Foreign Journals Received.—*Gaceta Médica Catalana Revista Quincenal.* Directores, Dr. Rodriguez Mendez, Catedratico de Medicina. Dr. Joaquin Bonet, Catedratico de Medicina. Leon Formiguera, Doctor en Medicina. Redaccion y Administracion; Baños

Nuevos, n m. 9, piso 2°. Condiciones de la Suscricion. En España; Un semestre, 22 rs.—Un año 40 rs.—Ultramar y Extranjero; Un año 60 rs.—Barcelona. 1881. Año 1. Número 1. 15 de Enero.

Revista de Ciencias Medicas, Periodico Mensual de Conocimientos Médicos. Redaccion: Dr. D. Francisco de Paulo Arró. Antiguo director de la Abeja Médica. Dr. D. Luis Carreras-Aragó. Director de una clinica oftalmologica. Dr. D. Ramon Coll y Pujol, Catedratico de Fisiologia de esta Facultad de Medicina. Dr. D. Juan Soler y Buscallá, Sifiliógrafo y Médico de número del Hospital de Santa Cruz. Administracion: Mirallers, 7, entresuelo; Horas de despacho, de 1 á 3. La Correspondencia y Cambios al Director, Dr. D. Luis Carreras-Aragó, Ronda de San Pedro, 172, Bajos. Año VII. Número 1. Enero de 1881.

Revista Frenopatica Barcelonesa.—Eco Cientifico del Manicomio Nueva—Belen. En S. Gervasio de Cassólas, suburbias de Barcelona. Dirigida por el Dr. D. Juan Giné y Partagas. Médico-Director del mencionado Manicomio, etc., etc. Le publica una vez al mes. Precios: Barcelona, 20 reales año. Demas puntas de la Peninsula 24 rs. Extranjero y Ultramar 40 rs. La Correspondencia, al Director de esta Revista, calle del Carmen, número 34 principal. Año 1. Enero de 1881. Número 1.

Anales del Circulo Medico Argentino.—Publicacion Mensual Director Principal Dr. D. Roberto Wernicke. Director Carlos C. Y. Sundblad. Administrador: Norberto Perez. Año IV.—Tomo IV.—Núm. III. Peru, Número 325. Buenos Aires. Imprenta de obras de *La Nacion*. San Martin 208.

Archivos de Medicina Cirurgia E Pharmacia.—No Brazil. Publicados sol a Gerencia do Dr. Pires de Almeida. Preço da assignatura. Por 1 anno, 12 $ 000. Por 6 mezes, 7 $ 000. Por 3 mezes, 4 $ 000. Provincia, Por 1 anno, 14 $ 000. Anno, 1. N I. II. III. Rio de Janeiro. Brazil.

El Observador Medico Revista Cientifica de la Asociacion Medica.—"Pedro Escobedo." El periódico se repartira el primer dia de cada mes.—El precio de cada numero será por suscricion, el de 12½ cs. en México y 13½ cs. en los Estados y en el Extranjero, franco de porte. La Administracion del periódico, 2ª calle de Santa Catarina, núm. 4. México.

Le Medecin.—Moniteur de La Policlinique.—Médecine: Pratique, Chirurgie, Hygiène. Publié sous la direction du Dr. Dupouy, avec la callabaration libre des médecins praticiens Abonnements: Paris, un an, 6 fr. Départements, un an 8 fr. Tout ce qui concerne la Rédaction dait être adressé, franco, à M. le Dr. Dupouy, rue Turbigo, 81. Pour les Abonnements, etc. S'adresser à M. Vignier, rue de Lafayette, 6.

Publications Received.—Edwards' Ventilation and Heat—Longmans, Green & Co., London; North Carolina Board of Health Report; Contributions to Ophthalmology—C. R. Agnew, M.D.; Sympathetic Inflammation Following Operations for Cataract—David Webster, M.D.; Duhring's Practical Treatise on Diseases of the Skin—J. B. Lippincott & Co.; State Board of Health of Louisiana; Magnin's Bacteria, Sternberg—Little, Browne & Co.

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ARCTIC HYGIENE.

By T. J. Turner, M.D., Etc., Medical Director U. S. Navy.

It is not with the expectation that there will be presented to the reader much of anything very new in the matter of Arctic Hygiene that the writer formulates from his naval sanitary gleanings the following items and the suggestions arising therefrom:

The Ship.—The choice of a vessel for Arctic voyaging may not come directly within the grasp of the sanitarian, but for safety, comfort and health of the officers and crew, the inhabitants of the structure, such vessel should be of wood, with sails, and fitted with auxiliary screw power. Built of wood, as less liable to be crushed, stove in, or otherwise destroyed by encounters with gales and ice, and not of iron, on account of the risk of its fracture from exposure to low temperatures, its power of conducting heat and thus cooling the interior of the hull, as well as the difficulty of repairing such structures when injured under Arctic surroundings; with auxiliary steam power as furnishing the mode of propelling the vessel in emergency, and also as the means for heating and ventilation; with an inner ceiling of felt and cork, these being good non-conductors, preventing the diminution of temperature in-board, from the cooling of the hull, and also arresting the condensation of moisture, rendering the vessel less humid, diminishing, also, the exposure of the crew to two prominent causes—cold and damp—of the "dread scourge of the Arctic Zone," scurvy.

It is to be considered that such a vessel requires coal space, and that for long continued service enough coal could not be carried. It is suggested, therefore, that compressed coal—in "bricks"—should be used, so as to make available every fraction of coal-bunker capacity; or, in the future, if petroleum is to be made of service as a fuel, some apparatus for its combustion under the boilers, should be devised. The screw should be well protected from injury, made to hoist, and spare blades carried, so made as to be screwed and fastened in the hub in the event of accident to the blades in use.

A condensing apparatus for furnishing a supply of fresh water, and small portable stoves in which petroleum can be used as fuel, to be used in the event of the abandonment of the vessel, should be part of the outfit. Steam heaters should be placed in all the occupied quarters. Their use would call for great vigilance on the part of the engineer officer, but their sanitary value over the inhalation of lamp smoke, ashes, etc., is unquestionable.

Sleeping bunks in the rooms of officers should be removed, and a canvas cot, such as in use in the U. S. Navy, substituted. An officer of the Hall expedition informed me that during the cruise, after his recovery from an attack of rheumatism which confined him to his bunk for a time, he found on examination a mass of ice under the bed upon which he had been sleeping, the result of the freezing of the condensed moisture of the exhalations from body and lungs. He had been sleeping in a wooden trough upon a layer of ice.

Parry, in his second voyage (Hecla and Fury, 1821–22–23), speaks of sleeping in hammocks in this manner, "by which ventilation is materially improved." The canvas hammock permitting a certain degree of free movement of air.

Regarding the ventilation of Arctic cruisers, without entering here upon any demonstration as to the necessity of fresh air, under these circumstances it will suffice simply to record the observations of explorers upon the subject.

The Hecla, in Parry's third voyage (1824–25), was fitted with Sylvester's warming apparatus, and Parry states: "it need scarcely be added how conducive to wholesome ventilation and to the prevention of moisture below, such an arrangement proved; suffice it to say, that we have never before been so free from moisture, and that I can but chiefly attribute to this apparatus the unprecedented good state of health we enjoyed during the winter."

Hayes states that "our quarters are throughout well ventilated and free from damp." Scurvy never appeared in his crew.

There is but little stated in any record of Arctic cruising of latrines on shipboard. It is suggested that an earth closet be used in high latitudes, using the ashes from the galley and furnaces in the place of earth. Some such apparatus would appear essential in case of sickness, and it becomes a sanitary necessity to prevent the exposure of the body to these extreme temperatures when obeying the calls of nature.

The Crew.—The men employed in Arctic voyaging should be between 24 and 33 years of age. The average full growth has been attained by the 24th year, and the years between that and the age of 33 may be considered as within the limits of the time when men are capable of the maximum amount of physical endurance. Men for this service should be of mean height and weight for their ages, and those with comparative greater length of trunk to full height chosen as having more staying power, capable of much greater endurance than others, as has been observed by Ruschenberger in men with long bodies and short legs; "duck-legged" men, to use a sailor's phrase. There are ample physiological grounds for the choice of men so characterized. If practicable, men who have been inured by habit to exposure in such latitudes, and with more or less experience

in the emergencies for which Polar cruising is so famous, should be chosen. Of course none but the physically robust and those in sound health should be selected. There is a physiological condition, better known than described, which has been termed vital resistance, the sum of the vigorous intensity of all the structures and functions of the body—a power to resist the depressing causes of disease—which is readily recognized by expert observers, and which should always be considered in the selection of a crew.

The prominent points, however, presented to the sanitarian in the consideration of Arctic Hygiene, are clothing and food. These factors, in a physiological equation, derive their importance from the single fact of the low temperature under which the Arctic explorer lives.

The voyager, with a normal physiological temperature of from 37°–37.5° Cent., represents a body exposed to the temperature of an "Arctic climate," where the thermometer registers an annual temperature of 0° Cent., and but for certain physical conditions, would be precisely affected by the modes by which all bodies are cooled; we know also that a heated body cools more or less rapidly according to the temperature of the medium in which it is placed, and that there is a tendency to the equalization of temperatures of the body and the surrounding medium when so situated. This tendency to the equalization of the temperature of the body (37°–37.5° C.) to that of the temperature of the surrounding media in an Arctic climate is sought to be arrested, and the body temperature maintained at its normal, through the instrumentality of clothing.

The other factor in this question is the constant maintenance of this normal temperature of the body, and is sought to be attained by the calorifacient elements furnished by food. On the one hand, there is a constant, *i. e.*, a low temperature, on the other the use of clothing to arrest the diminution of heat below the standard of health, and food to maintain the body temperature at its normal.

Nature has solved this problem for the inhabitants of the Arctic littoral zone, by teaching them to clothe themselves with good non-conducting materials to limit this physical diminution of heat, and has furnished them such articles of diet, known in chemical physiology as the heat-producing foods, wherewith the body temperature is maintained. *The nearer the Arctic adventurer approaches the dress and diet of his Polar associates the less he has to fear from the appearance of scurvy, and the more readily is his health sustained under such extreme climatic surroundings.*

Clothing.—For service in the Arctic regions it is essential that the underclothing, that immediately next the skin, be made of flannel. A double suit of shirt, drawers and socks, worn at the same time, is a much more efficient means of retaining body-heat than a single suit of the thickness of the two suits. The outer clothing should be made after Esquimaux fashion plates, and of same varieties of material—seal skin, the skins of bears, reindeers, wolves, foxes, hares, marmots and birds. Lyon states that seal skins are seldom employed for any part of the dress except boots and shoes, as being more capable of resisting water, and of far greater durability than other leather. Kane recommends seal skin mittens. The fur head-dress should cover the neck and ears; the boots, shoes and gloves should be made

as stated after Esquimaux fashion. The use of a nose-cover has been objected to, but Kane recommended a fox-tail held between the teeth and covering the nose whilst exposed when traveling. A fur mask for the face will be considered under the remarks upon snow-blindness. Hayes says of the Esquimaux living at Renssalaer Harbor, lat. 78° 37′ N.: "Their clothing (whilst out hunting for food, bear and walrus) at this period consists of a bird-skin shirt, bear-skin pantaloons, boots and mittens, dog or bird-skin stockings and a fox-skin coat, with an attached hood covering the head. Upon entering the huts, where the temperature ranges from zero to the freezing point, the coat is always taken off; the outside temperature ranging from 30° to 70° F. below zero."

The sleeping dress in Parry's Polar voyage (1827) was made of camlet lined with raccoon-skins, and the traveling dress was made of strong box-cloth. The sanitary ruling appears to be to dress in the same materials as the inhabitants of the Arctic circle, supplementing such clothing by other fabrics as scientific observation has added to experience.

Much the same ruling will apply to the item of food and its preparation.

Food.—It is not proposed at this time to enter upon the consideration of the nutritive values of the various prepared foods that have been suggested for the prolonged rationing of the Arctic cruiser, nor to dilate upon the recondite physiology of calorification. What is to be considered as regards Arctic Hygiene relates especially to the quantity and quality of the food. As to quantity, according to Dalton, the amount necessary for a man in full health and exercising in the open air, per diem, equals about 2.41 lbs. av. of solid food, and 3.38 lbs. of liquid food, a total of 5.79 lbs. equal to about $\frac{1}{24}$ to $\frac{1}{28}$ of the weight of the body. The average weight of the daily ration in the navy at sea is 40.21 oz., liquid food being excluded. These amounts must be considered as the minimum quantity consistent with the maintenance of health within the temperate zone. Sir John Ross states that an Esquimaux eats perhaps 20 lbs. of flesh and oil daily. Parry's test on an Esquimaux's appetite for one meal was 8½ lbs. of flesh, 1¾ lbs. of bread and bread dust, water not counted, and the quantity was not considered extraordinary. In another instance he gave to a young Esquimaux 10¼ lbs. of solids, 1 gallon and 1 pint of water, 1¼ pints of soup, 3½ glasses of raw spirits and a tumblerful of strong grog, and in yet another instance the subject ate of solids—

	lbs.	oz.
Bread dust and train oil	1	10
Walrus flesh, boiled	7	1
Seal and bread	1	0
Two candles		3
Bread and butter		1
Total	lbs. 9	15 oz.

Of fluids—Rich walrus soup	2 quarts.
Water	4 quarts.
Total	6 quarts.

Simpson, in his narrative of a journey around the world (1847), states that a Yakut in an hour ate 9 lbs. of beef and 4½ lbs. of butter. Hayes says: "I have frequently seen an Esquimaux hunter, when preparing for the hunt, eat from six to twelve pounds of meat, about one-third of which was fat, and I should place the daily consumption of the men at from 12 to 15 lbs." The food was mostly taken raw, or, as his men expressed it, "cooked with frost." Kane says: "I should average the Esquimaux ration, in a season of plenty, at 8 or 10 pounds a day, with soup and water to the extent of half a gallon." Parry had previously arrived at very much the same estimate.

These quantities certainly must represent the extremes. No attempt can be made to determine the mean quantity with any degree of exactness, but it is evident that an approximation can be made, and it is suggested that the weight of the food per diem for the Arctic explorer be based upon from $\frac{1}{20}$ to $\frac{1}{15}$ of his body weight.

Of the quality of the food: On account of the low temperature of the surrounding air, more heat is required to be produced in the body, and efficient combustible material is in consequence needed to support its ordinary temperatures. This is pre-eminently found in the fats. It must also be remembered that nitrogenous matters are required in food, not only for the formation of tissues, but likewise for contributing by promotion of the requisite changes to the utilization of the non-nitrogenous principles, and unless it exists in suitable amount in the food, these principles fail to pass to their proper destination.

It is known, also, that the carbo-hydrates contribute to the formation and accumulation of fat, but for this to take place the concurrence of a due amount of nitrogenous matter is required. It is upon these principles that the quality of the Arctic ration must be based. The daily allowance in character and quantity, as noted by Parry on his Polar voyage (1827), was for each man per day: "Biscuit, 10 oz., Pemmican, 9 oz., sweetened cocoa powder, 1 oz., to make one pint of cocoa, rum, 1 gill, with 3 oz. of tobacco per week."

Dr. Vreeland (1850) thus details the character and quantity of food, with other incidental remarks bearing upon Arctic hygiene, in his record of the cruise of the "Rescue and Advance":

"The daily ration for each man for four days in the week consisted of one pound of fresh beef or mutton, and three-fourths of a pound of preserved vegetables—either potatoes, carrots or beets. On the alternate three days one pound of salt pork or beef was issued, and in addition all the other articles of the navy ration. A liberal supply of vinegar, pickles and preserved cranberries was allowed, and an abundance of well fermented bread was made daily. The fresh provisions had been previously cooked and preserved in the canisters, hermetically sealed, and at first were quite palatable, but in a short time they became insipid and tasteless, and towards the close of the winter such was the disrelish and disgust for them that not one-half of the ration was eaten (I have observed and already noticed this fact regarding canned meats). A little variety in the way of bears' and foxes' flesh was now and then obtained and *enjoyed exceedingly*. They were considered luxuries and mostly appropriated to the scorbutic, upon whom they seemed to have an excellent effect.

"From two to four ounces of lime juice made into lemonade and taken daily in the presence of the medical officer by each man. . . . .

"Exercise and social entertainment. . . . Towards the end of the long nights a loss of strength and flesh was observed, the crew had become bleached to a pale waxy color, and the hair came out abundantly.

"Antiscorbutics in a measure lost their effect, only holding the disease in check, for the symptoms did not begin to disappear and cases recover permanently until after the rising of the sun."

The natives of South Greenland prepare themselves for a long journey in the cold by a course of frozen seal. At Upernavik they do the same with the narwhal, which is thought to be more heat-making than the seal, while the bear, to use their own expression, is "stronger travel than all," says Hayes.

"Our diet (Franklin and Richardson's Journey, 1819–22) consisted mostly of reindeer meat, varied twice a week by fish and occasionally by a little flour, but we had no vegetables of any description. On Sunday evenings we drank a cup of chocolate, but our greatest luxury was tea (without sugar) of which we regularly partook twice a day."

"Raw beef with acids and condiments," says Kane, "makes a salad which an educated palate cannot help relishing; and as a powerful and condensed heat-making and anti-scorbutic food it has no rival."

Sir John Ross (Narrative of a Second Voyage in search of a Northwest Passage, 1835) says: "He who is well fed resists cold better than the man who is stinted, while starvation from cold follows but too soon a starvation in food. . . . In every expedition or voyage to a polar region the quantity of food should be increased, be that as inconvenient as it may. It would be desirable that men could acquire the taste of Greenland food, while all experience has shown that the large use of oil and fat meats is the true secret of life in these frozen regions."

Sir John Franklin, in his narrative of a journey to the shores of the Polar Sea (1819-22), speaking of food and clothing as supplementing each other, says: "During the whole of our march we experienced that no quantity of clothing could keep us warm while we fasted; but on those occasions on which we were enabled to go to bed with full stomachs we passed the night in a warm and comfortable manner."

It must not be supposed that the abundant supply of animal food necessary is found in the Arctic regions. The records of all polar expeditions are those of privation. Even the Esquimaux—and I group for sanitary purposes under that term all the inhabitants within the Arctic circle—eke out a precarious existence; their struggle for life is a fight for food and clothing. Their days are spent in the hunt and capture, for food and raiment, of the seal, walrus, whale, narwhal, porpoise, wolves, foxes, deer, bear, birds, etc. It is on this account that all expeditions fitted out for Arctic exploration, have, in addition to either the army or navy ration of the country to which they belong, supplemented such daily allowance with preserved foods of various kinds.

For expeditions fitting out from the United States, the naval ration

which has the following composition and daily distribution is taken as the basis :

U. S. Navy Ration.	Biscuit.	Beef.	Pork.	Preserved Meat.	Flour.	Rice.	Dried Fruit.	Pickles.	Sugar.	Either— Tea.	Either— Coffee or Cocoa.	Butter.	Canned Tomatoes.	Beans.	Molasses.	Vinegar.
	oz.	pounds.					ounces.							fraction of pint.		
Sunday	14	....	....	⅓	....	½	....	....	4	½	2	2	6	....	....	....
Monday	14	....	1	....	....	....	....	....	4	½	2	....	....	½	....	....
Tuesday	14	1	....	....	⅓	....	2	....	4	½	2	....	....	....	....	....
Wednesday	14	....	1	....	....	....	....	4	4	½	2	....	....	½	....	....
Thursday	14	....	....	⅓	....	....	....	....	4	½	2	2	6	....	½	....
Friday	14	1	....	....	½	....	2	....	4	½	2	....	....	....	....	....
Saturday	14	....	1	....	....	....	....	4	4	½	2	....	....	½	....	½
Weekly quantity	98	2	3	1⅓	1	½	4	8	28	3½	14	4	12	1½	½	½

Of these supplemental preserved articles of diet, which should have, according to Parkes, the following essentials, "nutritious, portable, easily cooked and not liable to deterioration," it is proposed to consider a few which, having certain alimentary values and as adding variety to what would otherwise be a monotonous diet, and so pre-dispose to scurvy, are therefore important additions to the Arctic food supply.

Lemon or lime juice.—It is not designed to enter into the historical account of the association of lime juice with prolonged voyages, or as an anti-scorbutic, for if the constant iteration of its value for over two centuries has failed to impress its necessity upon the Arctic explorer, it is not now the time to commence to insist upon its value.

The British merchant shipping act orders that, after the vessel has been ten days at sea, one (1) oz. of lemon or lime juice, mixed with one (1) oz. of sugar and one-half pint of water be served out to the crew, between the hours of 12 and 1 daily.

In the Royal Navy ½ oz. of lime juice and 1 oz. of sugar are to be served out after 14 days at sea.

It would be well that this serving out be made under the cognizance of the medical officer, so that it is seen that every man has really taken the allowance provided.

As to the *role* of *alcohol*—distilled spirituous liquor—it is only to be used as a medicinal agent, and should not enter upon the list of daily foods. This question from a sanitary standpoint I consider settled. As to the use of beer and ale, they have been found of value, and materials for making a beer from spruce tops have been proved to be of benefit. I have in this connection to suggest that cider should be carried, as furnishing another acid (malic) to the acids already in use as anti-scorbutics. Concerning tea and coffee and chocolate, all are useful, yet I endorse the remark of Fonssagrives, "On peut dire que le thé est la veritable boisson Arctique."

Of the preserved meats—pemmican stands first in order, and has become a necessity. That prepared with sugar, raisins and currants appears to be preferable to that made without such additions.

Rochefort says, "A pound of pemmican per day, per man, is equivalent to three pounds of beef in nutritive value."

Weyprecht found the pea sausage of great value. Dried meat, Leibig's extract of meat and desiccated soups have proved of benefit to small traveling parties.

I have to suggest the use of sardines and caviare as parts of the Arctic food outfit. In 1807, Plowdens preserved meat in rich gravy. Granholm, in 1817, used hot fat; and Wothley kept meat fresh by preservation in oil.

I am of opinion that the methods of Granholm and Wothley are worthy of a more extended trial, and that lard and lard-oil should be used as furnishing animal fats. The meat could be placed in barrels or in tight tin cans; in fact, packed after the manner of sardines.

It may not be out of place to call attention to M. Bandet's method by which meat is kept in water acidulated with carbolic acid, 1 to 5 parts per 1,000 of water. A series of experiments proved that all kinds of meat could thus be kept for lengthened periods without acquiring any ill taste or odor. The meat may be placed in barrels or in air-tight tin cans filled witn acidulated water of the above strength.

The Belgian Musée de l'Industrie noted this method as "most deserving of attention." It might be of service in preserving the meats of animals killed in the Arctic circle, but there, as is well known, cold is the great preservative.

In case of necessity it is suggested that the brine from the salt meat be dialyzed. Place the filtered brine in a bladder or a vessel of prepared dialysis parchment (a chamois or buckskin has been used) and place it in a large vessel with water; the salt diffuses out, leaving the meat extract behind; from two gallons of brine was obtained a fluid which yielded, on evaporation, one pound of meat extract. This, mixed with flour, forms a meat biscuit. Salt water may be used at first. The stomach or bladder of some animal could be utilized in the absence of parchment paper. An abundant supply of cheese and condensed milk should not be omitted from the supply of foods.

As to the use of fresh animal diet for the prevention of scurvy, Hayes says: "The same laws govern the Esquimaux and the white man, and just in proportion as we of the Advance accustomed ourselves to the diet of the Esquimaux did we gain power to expose ourselves with impunity to low temperatures," and further says: "My experience with Dr. Kane has led me to believe that the scurvy, hitherto so fatal to Arctic travelers, may readily be avoided by the liberal use of fresh animal diet;" and Kane, when in great anxiety with a scorbutic crew, wrote: "Had we plenty of frozen walrus I would laugh at scurvy," and that the operation of freezing destroyed entirely the repulsiveness of raw flesh.

Prepared meats should be of recent date as to their preparation. Elsewhere I have stated that the slow chemistry of hermetically sealed aliments needs investigation. Fonssagrives says that "Nutrition always suffers, whatever may be its alimentary resources in other respects, if its elements are long removed from the influence of life."

From the above statements it will be observed that in all Arctic explorations:

1st. That there is an absolute necessity for ample supply of animal food.

2d. That this food should mainly be of fat.

3d. That such food is more valuable as a food when recent; and

4th. That the Arctic explorer should accustom himself to live upon Arctic animals.

5th. That a full meal should be taken at the end of a journey—after work.

6th. That fresh raw animal food is the best antiscorbutic.

Of vegetable foods.—Fresh bread should be used whenever it can be conveniently prepared. This necessitates the carriage of flour in bulk, but the value of fresh bread over the ordinary sea biscuit is undoubted.

Dried potatoes, onions, carrots, beets, parsnips, have all been proved useful. Much depends on their cooking to render them palatable.

The writer has noticed a method which is employed by the whalers in the North Pacific Ocean for preserving potatoes on long voyages. The potatoes are to be cleaned, pared, cut into small cubes, placed in a hogshead, and then covered completely with a dense black sugar-house molasses. When taken out, washed and cut, each mass will be found to have become discolored externally to the depth of a line or two, but the taste and texture of the tuber remain.

Sour crout furnishes lactic acid, tomatoes and cranberries give malic and tartaric acids, vinegar and pickles acetic acid, and lemon-juice citric acid.

I have already suggested cider as furnishing malic acid, and suggest the use of apple butter, made by boiling apples to the proper consistency with cider, as furnishing a desirable addition to the food supply. Latterly, in considering this matter, I am disposed to suggest also the addition of malt extract, and, considering the amount of oil contained in them, peanuts as a relish. As to the use of fresh vegetables, whenever scurvy grass and sorrel can be found they should be used.

Dr. Joseph Wilson, U. S. Navy, says: "The idea of some sort of a small garden for fresh vegetables on shipboard has not altogether been neglected. Thus we read of a tank of water being kept on deck for the cultivation of cresses. We would suggest something much more productive of fresh vegetables without so much interference with the deck of the ship. There are many small seeds, beans, peas, lettuce, mustard, parsley, horse-radish, turnip, celery, etc., which may be kept on board for a long time, and by means of a suitable apparatus they may readily be made to grow till they develop two or three leaves to each seed. They are thus capable of furnishing, in abundance, the fresh material for a nice salad, under circumstances which would otherwise render this quite impossible. I have used an apparatus consisting of a series of earthen vessels peforated like a colander, except the lower one, and provided with a loose lid. Each of these vessels, except the lower one, is supplied with a layer of seeds, previously washed and soaked; the whole is adjusted in position (one vessel fitting partially to the rim of the other) and a cupful of water poured into the upper part, whence, gradually percolating, it moistens the seeds in the whole series, any superfluity of water collecting in the lower jar. Every two or three days the water

is poured from the bottom into the top of the series, and in the course of a week or more, varying with the temperature, condition of the seed, etc., the whole apparatus is found to be packed with tender sprouts."

Lyon (1821), in the Hecla, succeeded in raising quite a number of vegetables, cresses, mustard, peas and radishes. In four months 178 lbs. were grown, and around his own stove in the cabin fourteen lbs. of fresh vegetables. He speaks of the effects of the absence of light upon vegetables grown in this manner as being of a light yellow color, with few leaves.

Scurvy.—This scourge of the seas should no longer exist. It is not the purpose here to enter into its history or pathology; all that is required for the sanitarian is a knowledge of its causation, and prevention follows then as a matter of course.

This nutritive cachexia, as De Mericourt calls it, has as its causes, cold and damp, over-crowding, the prolonged absence of light, depressing emotions, fatigue, impure air, harsh discipline added to insufficient food or a badly composed diet. Sir Alex. Armstrong states as his opinion, founded upon his observations in the Investigator (1851), "that cold and moisture aid very materially in the production of this disease, in proportion to the intensity of these agents, and consequently to the rapidity with which they favor the abstraction of animal heat. This is more particularly the case when the quantity of food is insufficient to supply material for the production of that caloric which cold and moisture have abstracted."

Dr. Hayes says, regarding scurvy, that whenever it has occurred in vessels visiting the Arctic seas it has been mainly owing to accidental causes, which experience has taught us to avoid. These are: salt food, cold, the darkness of the long winter night, with the depressing moral and physical influence which it carries in its train, and as an occasional exasperating cause, excessive exertion.

Says Mr. Harry Leach (1867), "Diet, bad provisions, and any form of disease to which sailors, in common with other men, are subject, will predispose to scurvy."

The report of the committee to the Lord Commissioners of the Admiralty on the cause of the outbreak of scurvy on the Alert and Discovery (1877) attributes the early outbreak of scurvy in the spring sledging parties to the absence of lime-juice from the sledge dietaries. The report goes on to state as follows:

"We are further of opinion that the long winter, extending over 142 days, involving, during that period, absence of sunlight, confinement during the greater part of the 24 hours to a lower deck, of necessity not free from damp, and an atmosphere comparatively vitiated, accompanied by exposure to extreme changes of temperature and deprivation of fresh meat, had not been without effect on the health of the officers and men, notwithstanding the apparent good condition in which they started on their sledging journeys. These predisposing causes of scurvy were aggravated by the severe cold and arduous labor encountered by the sledging parties immediately on leaving their ships, followed by the usual results, inability for some days, on the part of those concerned, to take their proper allowance of food and to obtain sufficient sleep."

This committee also stated that the evidence was almost unanimous that the want of fresh vegetable food, or some of the constituents which compose fresh vegetable, and probably fresh animal food, is the cause of scurvy. The other conditions are previous illness, deprivation of sun-light, cold, impure and damp atmosphere, want of sufficient exercise, a diet deficient in fresh meat, and fatigue.

Whilst the above statement is true concerning the Arctic explorer, it does not hold entirely good as to the Esquimaux, who are essentially meat eaters, the Arctic flora not furnishing such a quantity of edible vegetables as appears necessary to a physiological diet, or one protective against scurvy. Perhaps there are ethnic differences in this respect.

As to the prevention of scurvy—Kane says, " the scurvy exacts a comfortable temperature and a drying one." Armstrong states, " where scurvy prevails on board ships, the decks should be kept dry, and the air warm and comfortable. A cold moist atmosphere between decks is at all times pernicious to the health of a ship's company." Avoid over-crowding, allow no diminution of air space, keep the crew in the open air in as much of sunlight as is possible, cultivate cheerfulness, avoid over-work, and at the same time laziness. A discipline firm, yet mild. As a common danger threatens all, so a community of good feeling, based on respect for the judgment, justice and consideration of the commander, should reign. The regimen grouped under the term anti-scorbutic has already been shadowed in the consideration of food.

Snow-blindness.—For the prevention of snow-blindness Kerauden recommended a fur mask fitted with blue glasses. Glasses of a neutral tint would be preferable, but it is doubtful if glasses should be used at all, owing to the liability to fracture. Metallic frames, covered with chamois skin, fitted with colored glasses, have also been recommended, but have, in addition to the accident of fracture, another objection, found in the rapid conducting power of the metal frame, even when covered. The " snow eyes " of the Esquimaux are made of light wood, with a bridge resting on the nose, like spectacles, and a narrow slit for the passage of light. A gutta percha mask, made after the same fashion, has also been suggested, but the Esquimaux apparatus is to be preferred. It can readily be adapted to a fur mask covering the face.

GENERAL CONSIDERATIONS.

Personal cleanliness is, of course, to be observed. The wearing of a long beard has been objected to, as it soon becomes coated with ice from the pulmonary exhalations. Both beard and mustache should be worn short. The hair of the head should be worn long. Parry, in his second voyage (1821–23), found excellent results in preserving the health of his crew, by " attention to cleanliness, superior warmth, drying of clothes and airing of bedding." I would recommend the use of petroleum, as fuel, in expedition parties. With the treatment of diseases and accidents incident to Polar exploration, the writer has nothing to do. The desire has been to present the best means of preserving the health of men under Arctic environment, and so prevent the occurrence of disease. With cleanliness, dryness, ventilation, food and clothing, the story is told.

In conclusion, the writer has no apology to offer for what is rather an extended series of references; they are deemed essential, and he has not gone into such detail save for the purpose of setting forth some suggestions regarding Arctic sanitation. Starvation, freezing and scurvy are the foes to be dreaded, and if this collection of sanitary weapons will serve to shield the Arctic voyager, their gathering together will be ample reward.

April, 1881.

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Commerce.—What has Commerce done for the world, that its history should be explored and philosophy illustrated, its claims advanced among the influences which impel civilization at so great a sacrifice of human life, and treasure?

It has enabled man to avail himself of the peculiarities and advantages of region and climate, to establish that division of labor which tends to equalize society, to distribute the productions of the earth and to illustrate the benefit of kindly interdependence. It unites distant races of mankind, cultivates amical relations among them, encourages mutual interests, and promotes that fraternity of feeling which is the strongest bond of permanent friendship. Races, nations, and communities differing in creed, in language, in social customs and dress, when brought in communication with one another find how much there is of universal application, and improve their conditions severally, by supplying the wants of the one from the abundance of another. The friendly intercourse among nations and peoples at the farthest possible removes from one another in distance and customs, created by Commerce, is surely, though slowly, it may be, revolutionizing the world. Time once was, when nations and tribes met only on the field of battle, and there was but one name for stranger and enemy. But now wherever a ship can float or sled penetrate—from the equator to the poles—the various emblems of sovereignty intermingle in harmony, and the sons of Commerce all the world over, in consulting their own interests, promote the cause of humanity and peace.

If, in seeking after the mighty influences which control human progress, the vision of the inquirer, ranging with the scope of his own ephemeral existence, censures the justice which is steadfastly pursuing its course through the countless ages, turns away bewildered by the calamities which crowd upon him and extinguish nationality in devastation and blood—let him not despair. But let him who would be discouraged and despond for humanity, and mourn for faith misplaced, for hopes betrayed, for expectations disappointed—*look back!* Have revolution and change accomplished nothing? Has there been no advance from kingly prerogative and priestly intolerance; no improvement on feudal tenure, vassalism and slavery? The end is not yet. Liberty is enlarging her bounds apace with Commerce. Let the downcast be cheered, for the Eternal Right watches over all—her king is COMMERCE, and it moves onward to overcome in its own good time.

SCHOOL HYGIENE.

Concise Directions for Recognizing the First Symptoms of Contagious Diseases, Prepared for the Use of the Principals and Teachers in the Public Schools of Brussels, by the Health Department.*

Translated by T. P. Corbally, A.M., M.D.

To the Principals and Teachers of the Public Schools :

Since the communication of contagious diseases is of very frequent occurrence in the schools of the city, and the medical inspectors cannot be always present, so as to send children home whose presence endangers the health of the other scholars, it is indispensable that principals and teachers should be able to recognize the early symptoms of these diseases.

Therefore, the Health Department of the city has presented to the Superintendent of Public Instruction the following *Instructions*, pointing out, in the most concise manner, the first symptoms by which contagious diseases may be recognized.

The Superintendent has decided to have them printed and a copy sent to all teachers in charge of children in the schools of the city :

Principiis obsta.—Attack the disease in the beginning.

Of the different diseases to which the human system is liable, some are injurious or dangerous only to the individual who suffers from them ; others may become so, through contamination or infection, to all who come near the person suffering from them.

In the former group may be placed nearly all the diseases from which we suffer ; in the second, more particularly the contagious diseases, as typhoid fever, scarlatina, small-pox, and the like.

It is always necessary for the preservation of the health of the school, to be able to recognize the diseases of the latter class in the earliest stage, in order to prevent them from spreading ; the teacher should be able to recognize the premonitory symptoms. Unfortunately, it is not possible to realize this desirable end, because these diseases, in their initial symptoms, seldom present any well-marked signs—they sometimes escape even the watchful eye of the experienced physician. Are we then to let the disease continue and spread through a school, before any check can be placed to its progress? By no means; for a careful observance of certain general symptoms, will always render it possible to recognize, even in the commencement, many of the severest diseases ; and, even if occasionally an error should be made, it may be a little inconvenient, but will do no irreparable harm, if a slight indisposition should be mistaken for the commencement of a serious disease. There will always remain the

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* Ville de Bruxelles.—Hygiène Scolaire.—Instructions sommaires sur les premiers symptomes des *Maladies Transmissibles*, formulées à l'usage du personnel enseignant des écoles communales. Par le service d'Hygiène de la Ville. Bruxelles : Imprimerie de Vve. J. Baertsoen, Grand' Place, 5. 1880.

great satisfaction that the seeds of destructive diseases have not been permitted to spread amongst healthy children. Besides, no matter how simple the illness of the child may be, his sickness will not be intensified by sending him home, nor by isolating him for a short time, until the characteristic symptoms become certainly determined. No blame should be attached to an excess of prudence in such cases.

It is proposed, as succinctly as possible, to describe such prominent symptoms as will enable the teacher, from the beginning, to recognize contagious diseases with a good deal of accuracy.

To facilitate the description of these symptoms, contagious diseases will be divided into :

A. *Internal diseases*, accompanied with initial fever ;

B. *Internal diseases*, in which the initial fever is at first not well marked ;

C. Diseases unaccompanied with fever ; and finally,

D. *External diseases*, or those having their principal seat on the surface of the body.

A. The first class embraces *Variola*, *Scarlatina* and *Epidemic Influenza*.

The first symptoms that attract our attention are intense fever; severe pains in the head, general or located in one point ; great heat of the skin ; well-marked congestion of the eyes ; a pulse hard and quick ; general lassitude ; both physical and mental prostration, or an unusual degree of excitement ; sometimes nausea and vomiting ; weariness, accompanied with pain in the back and limbs ; great thirst, dryness of the mouth, and heavy coating of the tongue.

B. The diseases of the second class, in which the fever is not always present in the beginning, are : *Typhoid fever*, *Measles*, *Croup*, *Quinsy* and *Varicella* (chicken-pox).

In the beginning of these diseases, great prostration is the rule ; there is a marked debility of both the physical and intellectual condition and difficulty in fixing the attention. Besides these symptoms, to which may be added those described above, there will be found : in *Typhoid fever*, a peculiar dullness, observable in the countenance, continued pain in the limbs, sleepiness and heaviness of the head, bleeding from the nose ; for *Measles*, a hacking cough, which is troublesome and persistent, frequent sneezing, excessive moisture of the eyes—the eyes glisten ; for *Croup* and *Quinsy*, harshness of the voice, a peculiar cough, similar to the sound produced in a vibrating metal tube ; besides, the lower part of the throat is red, swollen, and white patches may be seen covering the uvula and tonsils. These last diseases are extremely contagious. *Measles* is the mildest of all the contagious affections ; it is seldom recognized until the red eruption makes its appearance on the skin ; this is soon followed by rounded vesicles, which contain a transparent serous fluid.

C. *Infectious diseases*, without initial fever, are : *Whooping-cough*, *Catarrhal* and *granular ophthalmias*.

At first, Whooping-cough has all the symptoms of a simple cold, only the cough is harsher, more persistent and resonant. The surroundings of the person supposed to be affected, both in the family and outside of it, may often help to make the diagnosis more simple; later, the disease is characterized by unmistakable peculiarities ; these

are : attacks of spasmodic and continued coughing, giving rise almost to temporary suffocation, blueness of the face, a swollen and watery condition of the eyes, ending in a peculiar cry—a cry resembling the crowing of a cock—terminating in a copious discharge of transparent, viscid mucus. These attacks cannot be mistaken by any one who has once seen a case of the disease.

Contagious ophthalmias may be recognized by the redness of the eyes, by the photophobia, or intolerance of light, pain in the organ affected, and especially by an abundance of liquid matter which escapes from the corners and the free borders of the eye-lids.

To this group of *non-febrile diseases* should be added those affections of the nervous system which are not propagated by any morbid, virulent or miasmatic principle, but are generally the result of fear or of irritation. These are *Epilepsy, Convulsions, Nervousness* and *Chorea.*

Children subject to attacks of these spasmodic affections should be immediately removed from the presence of the rest of the children. It is necessary, then, to speak somewhat in detail of these affections, so that the teacher may take proper measures on the spot, and afterwards confer with the medical inspector as to the best course to be pursued in the future, in reference to the advisability of having the child removed from the school.

I. *Epileptic vertigo.*—The patient sits down or falls ; the face is pale and immovable, the eyes present a haggard appearance, involuntary movements agitate the upper extremities and the face ; complete return of consciousness after two or three minutes.

II. *Epilepsy,* or falling-sickness.—The child becomes pale, sometimes utters a loud cry, falls senseless and without feeling ; respiration is suspended, the body is stiff, and afterwards is violently agitated by muscular contractions and relaxations ; the face becomes of a violet red, the countenance is distorted and agitated with convulsive movements, the teeth are ground together, the tongue is often bitten and lacerated, a frothy substance, which is occasionally bloody, is forced by the convulsive breathing, with a hissing noise through the lips ; after this, return of normal respiration, pallor of the face, sleepiness. The child awakes astonished, dull, exhausted with fatigue. These attacks vary in frequency and in duration in the same individual, and, in the beginning, the health between the attacks may be perfectly good.

III. *Hysteria.*—This affection is less severe than the preceding, and is only found among the older girls of the school ; irritation is a very important element in its development. Sometimes the slightest contradiction will bring on an attack of this kind. The symptoms are : general disturbance, weeping, cries, screams, movements of the body, much more violent than those in epilepsy ; loss of consciousness is incomplete, or it may be entirely absent. The patient should be excluded from the school until it has been shown that these attacks, from whatever cause they may proceed, are not likely to return.

IV. *Infantile Convulsions.*—Convulsions in childhood are produced by various causes : violent emotions, fear, indigestion, worms, etc. The child should be immediately removed from the presence of others, and sent home as quickly as possible.

V. *Chorea.*—This disease is dangerous, because it is so easily spread by imitation. It is permanent, and consists in involuntary, irregular and disconnected movements, which may affect the whole body or be limited to one limb, to one side of the body, to the neck or to the face. Sometimes very slight, it may become so severe as to interfere with voluntary motion and prevent the patient from walking.

All persons suffering from this disease should be removed from the school, and not allowed to return until the disease has been perfectly cured.

Localized nervous movements are a sort of chorea, and should be excluded; but, when the movements are very limited and mild in character, exclusion from school may seem too harsh a measure, and the case should be reserved for the decision of the physician.

D. *Diseases of the Skin.*—To the last class of contagious diseases, belong all those produced by animal or vegetable parasites situated on the surface of the body.

Although a concise description is sufficient to enable the teacher to recognize these diseases, it will be necessary, before dismissing the pupil, to have the opinion of the physician, that there may be no reasonable ground for complaint; in the meantime, it is better to isolate the child from his companions, even in the class.

These diseases are: 1st, *Psora*, itch; 2d, *Porrigo*, which may be divided into favosa, tonsurans, decalvans. They may be distinguished by the following symptoms:

I. The *Psora*—an animal parasite. The itch is caused by the presence, under the epidermis, of a particular animalcule—the *acarus scabiei.* Symptoms: small vesicles, transparent at the top, caused by the presence of the acarus; they are situated between the fingers or on their inner surface, on the wrists, the arms, in the axillæ, over the abdomen, etc. These vesicles cause great itching, which is much increased during the night, and the vesicles are almost always torn by the patient, and then a brownish crust forms over the irritated surface. Frequently, a little white or grayish substance, varying in length from two to five millimetres, ending in a point of a dark color, in which the ascaris is enveloped, issues from the broken vesicle. The itch* can be cured in a short time, if properly treated.

II. *Porrigo* (teignes). These are caused by vegetable parasites.

a. Porrigo favosa (teigne faveuse). The vegetable, achorion, is generally found on the head. Symptoms: small yellow crusts of unequal size, consisting of a kind of scales traversed by small crevasses; the hair on these crusts is discolored, fine and brittle, and the disease may extend over the whole scalp.

The itching is very severe. A strong characteristic odor arises from the head. This disease is often followed by loss of hair and baldness.

b. Porrigo tonsurans (teigne tonsurante—vegetable: the tricophy-

* The word *gale* is a sort of generic term; its primary meaning, as used in the translation, is itch, but it is often used for *dartre*, a ringworm, and *gale à la tête* means a scald-head; then it is often used when speaking of diseases among animals; applied to horses, it is used for *farcin*, farcy, and to dogs; *gale de chien* signifies mange.

ton tonsurans) is also seated in the hair. Symptoms or appearance: hair fine, friable, less colored than that on the healthy parts; from black or blond it is changed to reddish or ashy gray; the hairs are often broken off irregularly, a little above the skin. Thus, by the loss of the hair, a real tonsure or bald spot, of the size of a quarter dollar, or larger, is formed. The surface of these patches is uneven, covered with a crumbling, powdery substance, and has a somewhat bluish tint.

c. Porrigo decalvans (teigne decalvante—vegetable: the microsporon) is found wherever the skin is covered with hair—the head, eyebrows, etc. Signs: itching, loss of hair, often, though not always, preceded by loss of color. The patches are bare, of variable size, and the surface even; the skin is soft and remarkably white. This disease, although it appears trifling, is, perhaps, the most severe of all those affecting the skin. It may go a long time unnoticed, and often leaves the body entirely denuded of hair. The habit children have, when at play, of changing hats or caps, is often the means of spreading this disease. They should be advised not to continue this custom where it prevails.

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Vacation Colonies for Sickly School Children.—The following was received several months ago, but published now as an opportune stimulus in the promotion of the work of St. John's Guild and other benevolent associations in the vicinity of New York and elsewhere, whose good works should increase proportionally with the admirable seashore advantages and privileges, now of almost unlimited extent.

BUREAU OF EDUCATION, *Washington, August* 7, 1880.

The subject of recreative trips for the children of the city poor has received much public attention for several years, and has been noted in the annual reports of this office. The report for 1872 also contains a short but very suggestive and valuable paper by that distinguished and benevolent physician, J. M. Toner, M.D., of Washington, D. C., respecting free camping grounds or parks, where poor children and their parents might be lodged during the warm weather. (Dr. Toner's paper in full: *Free Parks and Camping Grounds, or Sanitariums*, see THE SANITARIAN, Vol. I., p. 71.—*Editor.*)

This idea has been carried out in somewhat different shape during the last few years in Switzerland and Germany, as will be seen from the annexed translation of Minister von Puttkamer's order of May 26, 1880, and the accompanying report on vacation colonies, condensed from the *Centralblatt für die gesammte Unterrichts-Verwaltung in Preussen* for June and July, 1880. JOHN EATON, *Commissioner.*

BERLIN, *May* 26, 1880.

The vacation colonies for poor and delicate pupils established within the last few years by different larger cities, have proved so beneficial, both as regards the physical improvement of the children and the educational influence exerted, that a further development of them is urgently desired. This, however, cannot be accomplished by the

school administration in an official way, since there are no funds at its disposal for the purpose; a successful development can only be expected from the initiative of private associations. But these associations cannot succeed in all cases without the aid of the royal departmental government, especially in cases where the co-operation of teachers is needed in selecting and accompanying the pupils. In many cases the advice and assistance of technical members of the departmental government may be desirable.

I forward herewith five copies of a report which, besides other details, gives especial information concerning the financial side of the question, and I direct the departmental government to further every movement that may be inaugurated in favor of the vacation colonies.

The minister of worship and public instruction,

VON PUTTKAMER.

The first step towards the establishment of vacation colonies for poor sickly pupils was made by Pastor Bion, who, after having been transferred from Trogen, Canton Appenzell, to Zürich, was struck by the languid and sickly looks of many pupils. He at once decided to give them relief. After having collected the necessary means, he was enabled, in July, 1876, to send 34 boys and 30 girls, in charge of 5 male and several female teachers, and in the following year 39 boys and 55 girls, in charge of 5 male and 8 female teachers, for 14 days, into the country in the vicinity of Trogen.

Reports as to the success of these colonies led the sanitary councillor, Dr. Varrentrapp, at Frankfort-on-the-Main, to visit them. The impression which the colonies made on him induced him to imitate them at home; and so, in the year 1878, a committee was organized for this purpose at Frankfort. Of the 173 boys who applied to be admitted, the committee, aided by two physicians, selected the 97 who appeared to be the weakest. Of these 97 children, 93 were between the ages of 9 and 14 years, two were 8 years old, one 15, and one 17. They were divided into 8 groups, each of which was placed in charge of a teacher. The children left the city July 2, and returned July 25. The total expense amounted to 5,373 marks 30 pfennige (1 mark= 23.8 cents), or 55 marks 39 pfennige for each child (or $13.18).

The children were all greatly improved in health on their return.

In 1879, 241 boys and 164 girls applied for admission. Of these numbers, 85 boys and 48 girls were sent into the country, where they remained 25 days. The expenses amounted to 7,478 marks 50 pfennige, or 56 marks 30 pfennige ($13.40) for each child.

The city of Dresden also organized a committee last year for this purpose. Five thousand four hundred marks were collected, and 36 boys and 30 girls were sent into the country. The results were excellent.

At Stuttgart vacation colonies were organized by a committee under Dr. Albert Sigl. In 1879, 55 children were sent into the country from July 18 to August 11. The amount of money collected for this purpose was 3,720 marks.

Finally, the city of Vienna must be mentioned. In 1879, 20 boys were sent to a country place at Weissenbach.

This year (1880) the city of Berlin is going to join the movement. The local committee has for president the minister of state, Dr. Falk.

PERSONAL SANITARY RESPONSIBILITIES.*

By JOHN K. ALLEN, of Lansing, Michigan.

It will not be the province of this paper to present any new facts relative to sanitary science. There are leaders in this branch of scientific work who are revealing sanitary truths to be used by us in daily life, only too fast for us to comprehend and arrange in order in our minds.

But it shall be the province of this paper to attempt to point out wherein the best interests of the public health could be better subserved by a closer regard to the requirements of known sanitary laws, rules and regulations, and how that regard can be displayed by private individuals.

So closely interwoven in their final results are all our duties to fellow citizens, it is almost impossible to classify them; but for convenience in dealing with this subject, three divisions of our sanitary duties or responsibilities are suggested. These divisions are:

First.—Our responsibility to the State, or to other persons considered collectively.

Second.—Our responsibility to other persons, considered as individuals.

Third.—Our responsibility to ourselves.

First, then, we will consider our

PERSONAL SANITARY DUTIES TO THE STATE.

There is an undefinable power which prompts us to obey all laws enacted by the legislators of the State for the public good.

Lord Beaconsfield has said "The health of the people is really the foundation upon which all their happiness, and all their power as a State depend. The health of the people is, in my opinion, therefore, the first duty of the statesman, and I am confident that there is no object of higher importance to engage the interests of society." No one will contradict his statement. Truly, are not the best interests of the State fostered by any law, the observance of which shall make life more secure or of longer duration?

The prosperity of a State is measured by the number of working days enjoyed by its citizens, and any legislation which has a tendency to increase the number of working days by placing a citizen under more healthful conditions, enhances the public prosperity by a corresponding amount. The legislators have realized this to a certain extent, as is evinced by some of the public health laws which are found upon the statute-books of the State; but that much more should be done is only too evident to those familiar with the public health service of the State. But, rather than cry for additional legislation, will it not be best to speak of some of the public health laws of the State already enacted, and in many instances not obeyed by the people?

The law † provides that in every township the township board *shall*

* Read at the Sanitary Convention held under the auspices of the Michigan State Board of Health, at Battle Creek, Mich., March 29 and 30, 1881.

† Secs. 1692 and 1693, Compiled Laws of Mich., 1871, as amended by Act No. 56, Laws of 1877.

be the Board of Health. There are 1,064 townships in our State, and the law has established a Board of Health in each one of them, consisting of officers already elected for other duties, but many township officers do not take cognizance of this law, and do not perform any of the duties belonging to a health official. The succeeding section provides that within thirty days after the spring election or township meeting, this township Board of Health shall appoint a health officer (who shall be a well-informed physician, where that is practicable), and transmit his name and post-office address to the Secretary of the State Board of Health. In 1880, of the 1,058 township Boards of Health, 828 paid attention to this law, and the remaining 230 clearly violated the law which their own representatives have made. Hence it is one of the personal, as well as official, duties of every supervisor, town clerk, or justice of the peace of any township in which there is no active Board of Health, to comply with the law, infuse life and strength into the fully developed *form* of a local Board of Health, and make it perform the functions and offices for which it was created—the guardian of the health and lives of the citizens.

If you have not been made one of these officers by the franchises of your fellow townsmen, it is a personal duty, and should be a pleasure, for you to give the Board no peace until it performs every duty and takes every precaution which it may to protect you and yours from any source or cause of sickness. The law gives ample power to enable a Board of Health to throw a complete mantle of safety around you and your family, and should you not make it enforce the law?

Suppose you have risen from the position of a citizen of a township, and, thinking you can afford to pay more taxes, have moved into a village or a city? The same duty of keeping up a Board of Health lies before you, but it is a still more grave duty, because the liability of contracting sickness is increased, as the number of people gathered together has increased. The law provides that unless there is a Board of Health organized under the charter, the president and council of each incorporated village, and the mayor and aldermen of each city, shall have and exercise all the duties of a Board of Health. Your official duties are your personal duties, and if you are a member of a village or city Board of Health, are such that they demand your most patient, painstaking and reliable work. Have you, as an officer of such a Board, to deal with an outbreak of any contagious disease, is it not becoming to you, as a guardian of the health and lives of your fellow citizens, in all your acts to regard your high responsibility? If a single case of sickness or a death occurs where thorough quarantine or efficient disinfection enforced by you would prevent it, surely you and you alone are responsible for the sickness or death of that person. If, as a private citizen, you have reason to fear that one of your children will contract a fatal disease while in attendance at a school where the health officer allows children to attend from a family in which there is a case of such contagious disease, is it not your duty to demand that such negligence shall not be permitted, and that every precaution possible shall be taken to prevent the disease spreading into your own and other families?

You may say that I am wandering from the division of the subject as regards our sanitary duties to the State; but it must be borne in

mind that the laws provide for all these things, and it is clearly one of our sanitary duties to see that the public health laws of the State are fully enforced.

If the officers placed in positions of such trust, as members of a Board of Health, are not faithful in fulfilling their duties, it is our business at the next election to cast our votes for men who *will* be faithful. It is the custom to measure a person's breach of trust by the number of dollars in which he is a defaulter; let us measure the breach of trust of our health officials by the number of cases of preventable sickness in their respective jurisdictions.

Another provision of the law is that a health officer shall receive compensation. If you are a health officer your first duty is to demand reasonable compensation, and if you are a private citizen, it should be a cause for you to blush that your health officer does not receive sufficient remuneration to enable him to put forth his best endeavors in your behalf.

While the duties surrounding a person who is a member of a Board of Health are numerous, and the duties of the citizen in seeing that the Board of Health is properly kept up and in working condition are important, still we have other duties as private citizens, which, if we fulfill, will materially aid the Board of Health in its labors, and make its work more prompt and efficient.

Chief of these duties is the giving prompt notice of the occurrence of a case of a communicable disease in your family; this notice we are required by law to give. One of the most necessary things a Board of Health must know in order to control an outbreak of a communicable disease, is the location of *every* case of such disease within its jurisdiction. The sooner such a notice is given to the proper authority, the sooner the chances of communicating the disease from your house are lessened, provided the Board of Health, as well as yourself, takes the necessary precautions. If it be deemed necessary you should not object to the most vigorous and thorough oversight of your premises, and to the enforcement of strict measures for the abatement of the disease. To be sure it may be unpleasant to be cut off from the society of your neighbors, but if you do not enforce strict isolation in a case of diphtheria, your negligence may be commemorated by a monument over the grave of your own or your neighbor's child.

We have gradually approached the division of

OUR RESPONSIBILITY TO OTHER PERSONS.

Lord Derby once said at Liverpool: "No sanitary improvement worth the name will be effected, whatever Acts you pass, or whatever powers you confer upon public officers, unless you can create a real and intelligent interest in the matter among the people at large.* * * Whatever administrative measures can do—and they can do a great deal—they can never supersede the necessity for personal and private care. * * * The State may issue directions, municipal authorities may execute them to the best of their power, inspectors may travel about, medical authorities may draw up reports, but you can't make a population cleanly or healthy against their will or without their intelligent co-operation. The opportunity may be furnished by others, but the work must be done by themselves."

This fact could not well be better stated. In order to have any reformatory movement embrace the whole people, it must first be embraced *by* the whole people. It is well not to be discouraged because this is not done in a year, or even in a decade, but if we all do our personal duty according to the information we possess, it will help the cause of public health by just so much. No energy expended is wasted. If any unsanitary thing exists within our knowledge, our first duty is to abate it ourselves if possible, and if not, to at once ask the assistance of the health authorities. Do what we can ourselves, first, then call on others. If a foul cesspool or a vault exists on our premises, *clean it.* If a mass of decaying vegetable material is in our cellar, *take it out.*

We must remember that the evils of unsanitary premises do not affect our own families alone, but their deadly influences pass beyond our own line into the family of children in the next house, who may be stricken down first, and prove the deadly warning, while we ourselves may be spared. We must get over the habit of saying to our neighbors, "Look out for yourselves; I am going to arrange my premises to suit my own convenience," and placing our cesspools, vaults, barn-refuse, etc., as near the dividing line as possible. There is a false sentiment in the hearts of our neighbors which prevents them from resenting such an imposition, and complaining of us to the Board of Health as they should do. If each one of us would honestly try and keep our premises in the best sanitary condition possible, if we would conscientiously try to prevent disease in our own family from spreading into the families of our neighbors, we would then be performing our duties to other persons in a large degree.

This one position of a householder is only one of a multitude where we ought to act with direct reference to the health of others. The duties as a householder of keeping his house and premises in a clean, wholesome condition, are the easiest to perform. If by our own negligence a member of our own family is taken ill, it is to us the physician looks for pay, and it is a direct argument in favor of keeping our sewer connections in perfect order, our well-water pure, our ventilation thorough, and our children and ourselves away from the special contagium of any disease.

It is in our business occupations that our sanitary duties to other persons are hard to perform. It is well to have our shop girls always standing, strictly attentive to business, when a customer enters, but it would induce greater health and comfort to them if, in their unoccupied moments, they could sit down. It would make their smiles and ready responses to our patrons all the more hearty if they were compelled to work only a proper number of hours, and in a well-heated, well-lighted and well-ventilated apartment.

It would indeed be a pleasure if we could enter our public markets and not have our senses of smell and sight shocked by a mass of decaying fish, meat, or vegetables left by some careless huckster. If each butcher and fishman would endeavor to keep his place of business sweet, cleanly and pleasant to the eye, his personal duty to others would be partly done, and when he placed upon his counters only the healthiest and freshest meats, his duty to others would be largely accomplished. Of course, we all say it is to his advantage in

a business point of view to do so, but by our discontinuance of patronage we would help him to a proper sense of duty.

In the management of schools a large and comprehensive knowledge of public health measures would be very beneficial both to scholars and to teacher. Children, more than grown persons, are apt to expose themselves to unhealthful conditions, and to have personal habits which may, under certain circumstances, endanger themselves as well as others. By judicious teaching and example an instructor could greatly benefit the little people under his charge. The single point of teaching a child that the sudden lowering of the temperature of a part of the body will bring on the ordinary "cold," would greatly lessen the chances of that child's exposing himself to those conditions.

All such habits as placing marbles and pencils in the mouth, trading articles of half-consumed food, wearing each other's clothing, etc., should be discouraged and discountenanced. All water-closets, retiring-rooms, halls, playrooms and grounds for children ought to be kept in a perfect sanitary condition. It would be well if the teacher would use great care and judgment in seating children together, where this is necessary. In many of our schools single seats are provided, which are much more desirable. A great harm can be done to a sensitive organization and a pure mind by placing it in constant communication with a rude, unprincipled child.

The teacher might, unconsciously to the children, make a personal inspection of the scholars, and to those with untidy and uncleanly habits of dress or person give kind directions to "wash and be clean." I was recently informed by a teacher that she had two scholars who were very uncleanly in their habits; so much so as to be disagreeable if present with her. She said she had in vain talked with the children, and had been tempted to send a note to the parents of the children, but she was sure this would give offense. In cases of this kind a bath-room attached to the school, managed by the janitor, would be a capital place to send those boys for a half an hour or so.

I have selected only a few of the occupations in which we who follow them have great sanitary duties to perform for the good of other persons. Each person, as he names over the occupations of grocer, baker, miller, and many others, at once finds some sanitary duty they could perform which would render his own or his neighbor's life more secure.

It would seem that in what has been said before

OUR SANITARY DUTIES TO OURSELVES

is treated as fully as our duties to others, and this is true. But beyond these there are duties for us to perform in regard to personal cleanliness and habits which primarily affect only ourselves, and which are all important and necessary to a perfect condition of the body. It is to be hoped that none of us have gone so long without bathing that the evil effects of such a practice were forced upon us; although Dr. Kellogg told us at the recent sanitary convention in Flint that a man, upon emerging from a bath at the Sanitarium, in this city, said that "water had not touched his back before for twenty years." I do not know how this man was affected, but such a course is not to be recommended at least.

There are none of us, I dare say, who do not remember having been deprived of our sleep, night after night, until the bad effects upon our general health, and particularly upon the activity of our minds, have been noticed. But still we continue this practice in direct opposition to our best judgment. From a work by one of our most active sanitarians in this State, and one who has taken a great interest in this convention, I quote the following: "From seven to nine hours sleep are required by all persons. The rule should be, retire early, and sleep until rested." And yet, knowing this, we repeatedly remain up until two or three o'clock, writing, dancing, etc., and when we know that we must be on duty at the morning hour.

Another personal duty which we owe to ourselves as well as to others, is the laboring for improved sanitary conditions in public places—such as better ventilation of churches, school buildings, halls and opera houses; the best methods of sewering and draining private premises, cities and villages; public baths, public drinking fountains, and public water-closets; the securing of a pure and sufficient water supply. There is scarcely a public work which does not, directly or indirectly, affect the health of persons in the locality, and it is our duty to demand that these public works shall be constructed in the best sanitary manner possible.

It would seem that the people would embrace eagerly any sanitary work which would better their condition. But experience shows this is not the case. What is needed in sanitary reform is "an intelligent co-operation" from the people. There must be, too, a moral *force* behind the sanitary precepts, so that when the precepts are learned there will be courage and determination to follow them. It is impossible to carry on sanitary work where there is only a sentimental idea of it. It is all very nice for us to feel philanthropic, and to comfort ourselves with the reflection that we read sanitary books, and attend sanitary conventions; but if, while we do this, our foul drain is sowing the seeds of disease, or our child with a sore throat (which may be a mild case of scarlet fever or diphtheria) is attending school and spreading the disease broadcast, surely we are *very* far from the kingdom of sanitation. In order to act intelligently we must possess knowledge, and it is our duty to embrace every means in our power to learn of the laws of disease as well as of health, and, having done this, it is clearly our duty to put the knowledge gained into early and effective practice. Master the principles of the sciences which are the basis of public health work, and we will be impressed with the fact that the "possibility of the prevention of death and disease is not the dream of the sentimentalist, but the deliberate conclusion of the philosopher."

TOBACCO AT THE NAVAL ACADEMY.

ABSTRACT OF REPORT OF A. L. GIHON, M.D., MEDICAL DIRECTOR U.S.N., FROM THE REPORT OF THE SURGEON-GENERAL U. S. NAVY FOR 1879.

Unquestionably, the most important matter in the health history of the students at this Academy is that relating to the use of *tobaccco*, and I have urged upon the superintendent, as my last official utterance, before leaving this institution, with which I have been so long and so pleasantly associated, the fact, of the truth of which five years' experience as health officer of this station has satisfied me, that beyond all other things the future health and usefulness of the lads educated at this school require the absolute interdiction of tobacco. (For my previous reports on this subject, see "Hygienic and Medical Reports, United States Navy," vol. IV., pp. 832–836, 896–7.) In this opinion I have been sustained not only by all my colleagues, but by all other sanitarians in military and civil life whose views I have been able to learn, while I know it to be the belief of the officer who is to succeed me in the charge of this department, and who was one of the board of medical officers which, in 1875, reported "that the regulations against the use of tobacco in any form cannot be too stringent."* Since then, three successive annual boards of visitors, to wit, the board of 1877, of which Commodore J. W. A. Nicholson was president, the board of 1878, of which Rear-Admiral John L. Worden was president, and the board of 1879, of which Commodore T. H. Stevens was president, have indorsed the prohibition of tobacco "as a wise sanitary provision," and the last of these boards, on being informed that the regulation against its use was not then in operation, June 10, 1879, emphatically recommended that "its strict enforcement be at once restored."

Showing that my confidence in this matter was justified, I append the following extract from the letter of Medical-Inspector Gorgas to the superintendent, embodying recommendations to be presented to the board of visitors for the year 1880, which the delay in the publication of my report enables me to quote:

"The foulness of some of the rooms occupied by the cadets, observed by the inspecting officer upon his nightly visits, and by the medical officers on occasions of sickness, is largely due to the habit of smoking tolerated in the Academy, and which I would respectfully recommend to be forbidden.

"In addition to the foulness to which it contributes, and which, I think, accounts, to some extent, for the numerous cases of headache, gastric disorder, and vague trivial disturbances which enlarge our

* Prof. Richard McSherry, President of the Baltimore Academy of Medicine, in his recent work (published by D. Appleton & Co., New York, 1879) on "Health, and How to Promote It," states on p. 178, "that tobacco is injurious to growing boys, especially to school boys, is a subject *not open to discussion*. The medical officers of the Naval Academy, in the subjoined report (report of December 2, 1875, quoted above), but express the general sentiment of the profession in regard to a matter of such great importance on school hygiene."

sick lists, I believe the use of tobacco by the cadets induces difficulty of concentrating the mind upon study and defective muscular co-ordinative power. The professor of drawing informs me that he has observed among the smokers an impaired power of muscular control, which has retarded their progress and proficiency in his branch. I think most of the officers of this institution agree with me in regarding the use of tobacco by the cadets as injurious, and as being *more in vogue than when it was forbidden by the regulations.*"

. . . That so many adults use tobacco with apparent impunity, or even admitted benefit, is no argument in favor of its use by growing lads, for while tobacco, by arresting molecular waste of tissue in the mature man, may help to maintain the integrity of the organism, in the adolescent this very effect is detrimental, since it retards that progressive cell change upon which the advanced development of the body depends. Dr. Richardson emphasizes the statement that "the *young* should specially avoid the habit. It gives a doubtful pleasure for a certain penalty. Less destructive than alcohol, it induces various nervous changes, some of which pass into organic modifications of function." Aside from this effect on the nutrition, the adult smoker must be conscious that tobacco is not an aid, but an obstacle to mental application, and it was actually found in the *Ecole Polytechnique*—

"That a comparison made between the smokers and non-smokers showed that the non-smokers took the highest rank in every grade, and, further, that the smokers continually lost grade, and in 1861 the minister of public instruction of France accordingly issued a circular forbidding the use of tobacco by pupils in the public schools."

That the user of tobacco is incapable of concentrated mental effort is demonstrated by the fact told me by a member of the academic board, that cadets have complained of their inability to apply themselves to study and attain the class standing they desired on account of the excessive smoking in their rooms, in which they were compelled to indulge.

An agent that has been mischievously represented to be innocuous only because of the remarkable tolerance exhibited by a few individuals, and is actually capable of such potent evil; which, through its sedative effect upon the circulation, creates a thirst for alcoholic stimulation; which, by its depressing and disturbing effect upon the nerve centres, increases sexual propensities and induces secret practices, while permanently imperiling virile power; which determines functional disease of the heart; which impairs vision, blunts the memory, and interferes with mental effort and application, ought, in my opinion as a sanitary officer, at whatever cost of vigilance, to be rigorously interdicted. It is undoubtedly true that many will be impelled by their desire for this indulgence to gratify themselves, and resort to injurious and dishonorable means to evade the regulations against smoking, but equal ingenuity and want of principle are shown by the youth in his desire to obtain liberty and license in evading the regulations against "frenching," and by him who, through negligence, incapacity, or other cause, is deficient in class standing, in evading the regulations against "gouging," and by him who seeks to bully the plebe in evading the regulations against "hazing;" but the difficulty of restraining smoking should be no more valid excuse for its tolerance, in

the face of sanitary objections of such magnitude, than for the toleration of frenching or gouging or hazing. The use of stimulating liquors is forbidden, but that the regulation prohibiting it is evaded is shown by the empty whisky bottles which are picked up outside the cadets' quarters; but it is not proposed to allow drinking on this account, although, as a sanitary fact, a half pint of table claret or of beer would be a wiser indulgence than the cigar, or the innumerable cigarettes, which latter, there is good reason to believe, cause injury to the health from other agents than the mere tobacco which they may contain.

I have dwelt at such length on this topic, feeling assured that I shall have done no act of greater good to this school, in the success of which I have so profound an interest, than if I can succeed in saving its pupils from the impairment of health which is sure to result from the unrestrained premature use of tobacco.

———C———

School-room Tortures.—I want to say something in defense of the small boy in public schools. There seems to be a general idea that when he asks to leave the room it is simply to have a game of marbles in the yard or play some other game. That he has urgent reason for his request never seems to enter the darkened recess of his teacher's mind. He is told to wait until school is out, and should he rebel at this, another half hour or hour may be added to his torture. Now, as the teacher has never been a boy and devoured the best part of a gooseberry pie, or gulped several glasses of water within a single half hour, of course it is not to be expected that she can understand what the boy is enduring. Then a failure in lessons results in a shortened dinner hour, and as the boy has not thought to hedge against such a contingency by bringing his lunch with him, he is obliged to hurry home at a breakneck speed, swallow his lunch whole, and rush back to school. He eventually, after a course of this kind, will be able to furnish another illustration of the proverb that "the race is not to the swift," for his race will soon be run. Until some one can invent a boy gauge for truthfulness, I must say that I think that it would be better far that the whole school go to the yard without any excuse than that one boy should be made to suffer. This is a subject that needs ventilation (not the boys), as it seems to me that the boys can be disciplined in some way that will not undermine their health. I know the boy is a nuisance and tries the patience of his teacher, but there is no doubt that there will always be boys, and so it behooves us to protect their health, and not make our institutions of learning also institutes for the establishment of chronic and incurable diseases.—SCHOOLBOY, in the *New York Herald.*

MENU.

"What are them?" asked a countryman, pointing to a heaped-up dish in a restaurant down town. "Look like birds with their toes turned up. What are they?"

"Frogs, sah," answered the polite waiter; "very nice dish, sah! gentleman very fond of them?"

"Frogs! good gracious! Not the kind we have in our pond at home? Why, me and Mariah would starve afore we'd tech one."

So ignorance tears down in a moment what science has been years in discovering; and no amount of gastronomical skill will prevail on the unprejudiced rustic to taste one of his neighbors of the pond. "Ez ef the critters were fit to eat," he remarks in a disparaging tone, while he orders a pound of fresh pork, which he disposes of with great relish.

The man of taste and culture who had learned the value of brain food, comes in presently and orders a dozen of the piping pond larks, and when they are brought to him hot, crisp, delicate with that dainty rosiness of flesh which the professor of cookery knows is their perquisite, he eats them with all the immense satisfaction of an artist in comestibles. Frogs, as an edible in Detroit alone, form an industry for a large class of people, and a special item on the bills of fare at hotels and restaurants, the largest of the last mentioned establishments showing an average purchase of 10,000 dozens during the seven months of their popularity. Unlike oysters, they are good during all seasons, but in the winter months frog-fishing is abandoned. They are caught along the River and Lake St. Clair shore in nets, but in the marshes they are speared. As soon as caught they are skinned, and the refuse parts thrown away; the largest frogs are kept alive and taken in crates of a peculiar construction to Chicago, Cincinnati, and New York.

All the hotels to which driving and pleasure parties resort, make a specialty of them as a favorite dish. Early in the spring the frog-catcher gets from 25 cents to 30 cents a dozen for them, but later in the season they are as low as 10 cents a dozen. They retail at much higher prices, as the dealer assumes the risk of fluctuations in the market. From fifty to seventy-five dozen will occasionally be ordered for parties at private houses, and fancy prices range as high as 75 cents to $1 a dozen.

As pot-pies, stews, and chowder, they are a failure. The only legitimate way to cook a frog is to fry him brown in sweet table butter. As a preliminary, he must be dipped in a batter of cracker dust, which should adhere closely when cooked, forming a dainty cracknel of a golden brown color, with a crisp tang to it when submitted to the teeth. The tender juices thus retained lose none of their delicate flavor, and the dainty morsel needs no condiments to give it additional zest.—*Detroit Free Press.*

Editor's Table.

Filth and its Perils in New York.—The Opinion of the Medical Profession on the condition and needs of the city in regard to street cleaning expressed in a mass meeting of the physicians, April 13, 1881, has been issued in a pamphlet. It ought to, and we trust it may, be read by every intelligent person in the city. Moreover, it would be well if it were broadcast for the benefit of other cities. Rarely has there ever been a more lucid and earnest expression of the dangers of filth to a great population, or a more righteous outburst of just indignation against officials for tolerating and abetting filth at the peril of human life, than the opinion which is embodied in this pamphlet. It affixes a brand upon certain city officials and members of the Assembly, which should ever hereafter be made ineffacable for themselves and a warning to their successors. Men who have no regard for human life, or who are so purblind to dangers, the like of which are well known to have inflicted indescribable misery and eventual destruction of great populations in the past, are totally unfit for trust in any of the affairs of civil government. As swineherders, they may excel, and they should ever be consigned to such occupations only as befit their own groveling nature.

The resolutions adopted, while applied specifically to New York, comprehend truths of universal application; they were as follows:

The Medical Profession of the city of New York, in mass meeting assembled, do resolve and declare:

That the garbage and the filth, the necessary accumulations of traffic and of households in this great metropolis, have not been thoroughly removed from the streets of our city for a number of years.

Resolved, That this condition of things produces disease, renders a simple type of it malignant and dangerous, and acts injuriously in the following ways:

First.—Meat and other food exposed for sale are poisoned by the exhalations from the filth.

Second.—The air-boxes of our houses convey a poisoned atmosphere.

Third.—The heavy rains and snow bring into solution the accumulations at the mouths of obstructed culverts, and aggregate and intensify morbific agencies.

Fourth.—The irritating and poisonous dust from excrementitious substances and filth is of the greatest damage to the eyes and the air-passages.

Fifth.—Malaria is created and fostered by the reeking sewers and gutters.

Sixth.—The difficulties of maintaining cleanliness in the houses and in the persons of our inhabitants are greatly increased.

Seventh.—Persons are so disabled by living in the midst of these injurious influences that many are compelled to seek frequent changes of climate.

Eighth.—The children of the poor who live in tenement houses, under bad sanitary conditions, and attend school in crowded school-houses, have as their only play-ground the streets in which these accumulations from dwellings and from animals are producing their injurious effects.

Resolved, That one of the causes of the increased mortality in this city during the last winter—a mortality which places its death-rate, despite our natural advantages of position, among the highest in this country—has been neglect in removing the accumulations aforementioned.

Resolved, That the methods heretofore adopted by the Police Department of the city have been notoriously bad, and even those methods have been inefficiently carried out. Party politics has been made to enter into what should be a purely sanitary duty performed by a responsible officer.

Resolved, That the Health Board of this city, the appointed guardians of the public sanitary condition, in its political environment and composition, have been found to be apologists rather than denunciators of the neglect and inefficiency which have produced the frightful condition of our highways, and the noxious vapors which have entered our houses during the last few months.

Resolved, That in view of these facts, and also in view of the fact that a petition signed by more than two hundred and fifty physicians of this city, and sent to our representatives, has never been fully placed before the Legislature, and our sacred right to direct the sanitary legislation of the city has been disregarded, we again, in mass meeting assembled, protest against the recent action of the Assembly in refusing to pass the Citizens' bill as it came unanimously from the Senate, and now demand of our representatives from this city that they shall reverse their action and assist in passing this bill, which is demanded by the intelligence and honesty of this metropolis.

Resolved, That we deny the right of politicians to decide matters pertaining to the health of the State by claims upon party fealty, and that we protest against the policy which subjects the health and welfare of our citizens to the behests of party leaders, however exalted their position.

Resolved, That we decline to support at any future election any representative from the city of New York who shall disobey the requests of our citizens upon this subject.

Resolved, That we invoke the aid of our professional brethren throughout the State, by their influence upon their representatives, in securing the reforms we demand.

The Sanitary Council of the Mississippi Valley, at Evansville, April 20–21, considered the various subjects relating to inland and maritime quarantine, and re-affirmed its action taken

at the meeting in New Orleans, December, 1880, by the adoption of the following resolutions :—

Resolved, That the Sanitary Council of the Mississippi Valley re-affirms the action had at its December, 1880, meeting in New Orleans, and demands that the Louisiana State Board of Health invite the appointment and maintenance by the National Board of Health of inspectors at New Orleans and Port Eads and at the Mississippi quarantine station, and announces that, in the event of any failure on the part of said State Board of Heath of Louisiana to act in good faith toward said inspectors, then the Boards of Health represented in this council will be compelled to take into their own hands the protection of the health of their own people.

Resolved, That the inspection service of river and railroad transportation by the National Board of Health is hereby endorsed and its re-establishment for the ensuing year is urged with confidence on behalf of the representatives in this council ; that the certificates and bills of health issued by said inspection service shall be accepted as *prima facie* evidence of the sanitary status of vessels and trains presenting the same.

Resolved, That this council, being firmly convinced that the safety of New Orleans, as well as of the valley, lies in the rigid exclusion of infected ships from the lower Mississippi, strenuously urges upon the State Board of Health of Louisiana a modification of section 6 of its rules and regulations for the government of quarantine officers and stations, etc., so as to read : "Section 6. All vessels from ports in which yellow fever is prevailing, or from ports where contagious or infectious diseases are reported to exist, shall be inspected at Port Eads. If any such are found to be infected or to furnish reasonable grounds for suspicion of infection, such vessel shall not be allowed to pass Port Eads northwise, except upon the presentation of a certificate from the inspector of the National Board of Health at the Ship Island quarantine station, setting forth that the vessel has been subjected to proper treatment, and is free from liability of conveying contagion."

Resolved, That, in the judgment of this council, the quarantine of vessel and freight should consist of the purification of the vessel and its contents, which should then be returned to commerce as speedily as practicable, and that any sanitary detention beyond the time necessary for such purification is not only unnecessary, but positively increases the danger of the propagation and spreading of the infection.

Resolved, That this council condemns all methods of suppression and secrecy with reference to information of contagious or infectious diseases, and therefore discountenances the use of cipher telegrams ; but in the event of danger from such diseases at any point in the Mississippi Valley, it is the duty of the executive officer of the health organization of such place to fully and promptly advise the proper authorities at all threatened points.

Dr. Salomon, of New Orleans, read a resolution of the Louisiana State Board of Health, adopted April 14, virtually anticipating the sense of the above resolutions, excepting the residence of a represent-

ative of the National Board at the quarantine station on the Mississippi river, on the ground that this privilege was the exclusive prerogative of the Governor of the State, which will doubtless be granted. This action of the Louisiana State Board, although not as complete as desired, is, notwithstanding, a long step towards securing the so much needed harmony with the National Board essential to securing the highest degree of efficiency for the protection of Louisiana and all the gulf States.

Yellow Fever Prevention.—The following abstract of a letter addressed to the Director of the "*Revista Médico-Quirurgica*," Buenos-Aires, will furnish matter for reflection to those interested:

LAZARETO DE LA ISLA DE FLORES, 30 *de Enero, de* 1881.

We have recently entered on a period of real danger for the development of *exotic diseases*, and the most active vigilance is necessary, in the presence of so terrible an enemy. We must not, however, be depressed by exaggerated fears, nor resort to harsh and rigorous measures; a proper quarantine, rigorously carried out, being entirely sufficient to preserve us from an invasion of *yellow fever*. This can be effectually accomplished by detaining those vessels arriving from infected ports, or which have touched at such ports, together with their passengers and crews, for a reasonable time, until they have been put in a perfectly healthy condition.

On the subject of quarantines as a means of preventing the importation of yellow fever, my opinions are formed on the experience gained in an active practice of seven years in that specialty.

The thing most to be desired, and the one I most heartily wish for, is a Sanitary Commission, composed of the most eminent medical men in the two republics, to study this most important question with patience and moderation, in order to adopt a uniform system of quarantine, based on modern scientific principles. Some time should also be fixed, as nearly as can possibly be determined, for the detention of vessels and passengers, and this should be limited to what is absolutely necessary for the preservation of the public health. Whoever studies attentively the pathogenic phenomena of yellow fever in all its relations, and attentively observes its rapid and destructive course, the causes which produce it, the climates in which it prevails endemically, the season of the year which is attended with the greatest danger of its development, the time necessary for the morbific principle to remain in a state of incubation before the fever appears, etc., etc., must necessarily form a just appreciation of this terrible disease, and if he is called on to give his decision on such measures as are best adapted to conciliate the great interests of commerce and the health of the public, he will most undoubtedly give it with the loyalty and fidelity of a man fully convinced that he is giving it in the interest of truth.

Two years ago a new rule of maritime hygiene was adopted in this republic, intended to keep distinctly in view the best means of reconciling and harmonizing, as far as possible, the interests of commerce and navigation with those of public health. The rules to be

laid down in the future should, in my opinion, admit of some modifications to be made in accordance with the preventing and prophilactic regulations demanded by the varying conditions that may arise. The quarantine regulations have been always strictly enforced at this station; for experience has shown that, without such regulations, it is impossible to guard the public health against danger from without; and although the complaint has been made in Rio de Janeiro, that the quarantine here is conducted in the interest of speculators, as I have before pointed out, it can be safely affirmed that public health and the safety of the two republics has been the sole object in view, and it has been the constant aim of those in charge of it to make it equal to the best quarantine stations of other nations. . . .

Immediately after the visit of the health officer, the passengers and their baggage are landed, and are not allowed to return on board during the quarantine. They are constantly under the supervision of the medical officer; their baggage, so far as possible, is disinfected, is aired daily, the linen is washed, and every precaution is taken to send them out again in the best sanitary condition; only such as are suspected being detained and isolated.

(Signed) S. BERTELLI, *Health Officer.*

T. P. C.

The North Carolina Board of Health—first biennial report, 1879–'80—8vo., pp. 201, concisely sums up a large amount of fruitful work in a field hitherto wholly virgin; and all the more creditable this—to the accomplished Secretary, Dr. Thomas F. Wood—when considered in relation with the small means which the law placed at his disposal. Upon him was devolved the duty of organizing county Boards of Health throughout the State, at an expense to the superintendents thereof equivalent only to the amount spent in the year 1878 for medical attendance on the jail and poor-house and workhouse, and the amount paid for medico-legal examinations at coroners' inquests. In some counties this was nothing, and in many of them it was very small. Notwithstanding, in September, 1879, no less than *fifty* county Boards were organized. The superintendents undertook their duties, impelled alone by their pride and the interest they had in the work which had been inaugurated by the medical profession of the State.

The work of registration was instituted, numerous circulars and forms for reports distributed, and the Board placed in good working trim within four months from the time of its organization—May 21, 1879. The special subjects of investigation have been drinking water, drainage, ventilation, the use of disinfectants, methods of performing post-mortem examinations, and procedure in cases of suspected poisoning. The general subject of *Sanitary Engineering*, comprehending the relation of death rates to sanitary works, and the usual conditions of filth diseases; drainage and water supply; lighting, cleaning, sewerage, ventilation, etc., in a special appendix by

William Cain, C.E., member of the Board, is a particularly meritorious paper, well calculated to interest and instruct the people on the most essential means of promoting the public health.

Alike instructive is the admirable paper by Hon. Erastus Brooks, on *What the State Owes the People—Public Health is Public Wealth*, read before the A. P. H. Association, and published in the January number of THE SANITARIAN. *Limitation and Prevention of Diphtheria*, by R. L. Payne, M.D., member of the Board, is also a paper eminently worthy of the widest distribution among the people, considering the great need of information on the means of preventing this disease—so commonly associated with filthy surroundings. The subject of *Vital Statistics* is presented in a series of tabulated statements comprehending the meteorological and local conditions, prevailing diseases, diseases of domestic animals, conditions of public buildings, and domiciliary surroundings, remarkably suggestive of the studious assiduity of the devoted Secretary, and eminently illustrative of the apothegm, "PUBLIC HEALTH IS PUBLIC WEALTH." But withal, most unworthily. A legislature so incapable of appreciating the value of such work, so purblind, or so careless of the health of the people of the State, as to be guilty of appropriating the insignificant sum of *two hundred dollars a year* for the purposes contemplated by the law creating this Board, should at least, if possible, be excluded the benefits of the service. To the shame of the legislature, but to the lasting honor of the Secretary and Treasurer of the Board, this statement deserves to be broadcast throughout the country:

"Received appropriation for 1879	$200 00	
" " " 1880	200 00	
		400 00
Balance expended from private means by Treasurer		$431 99

"I found it necessary, in order to keep the machine in running order until help would come, to expend from my private means $431.99. I did this, having full faith in the appreciation, in due time, of the great importance of the work."

The Michigan Sanitary Convention, held at Battle Creek, March 29–30, the third recently held under the auspices of the State Board of Health, was, as those which have preceded, eminently promotive of the praiseworthy object of the Board—the diffusion of sanitary knowledge among the people. The medical profession throughout the State is becoming more and more interested, and of them, and of citizens generally, there was a goodly attendance.

Opening and welcoming addresses were made by Hon. E. C. Nichols, Mayor; Rev. Dr. T. H. Jacokes, and Rev. D. F. Barnes. Papers were read on *Legal Measures for the Prevention of Casualties*,

by Hon. Leroy Parker; *Compensation in Hygiene*—Milton Chase, M.D.; *Systematic Study of the Causes of Sickness*—Henry B. Baker, M.D., Secretary of the State Board of Health; *Points in the Physiology of Alcohol*—A. F. Kinnie, M.D.; *Personal Sanitary Responsibilities*—Jno. K. Allen, Esq.; *Consumption*—Bela Cogshall, M.D.; *Medical Nostrums in their Relations to Public Health*—Prof. A. P. Prescott, M.D.; *Some of the Evils which Result from the Free and Injudicious Administration of Nostrums to Young Children*—Amos Crosby, M.D.; *Criminal Abortion*—Edward Cox, M.D.; *The Health Service of the State*—Geo. E. Ranney, M.D.; *Sanitary Rules vs. Medical Theories*—Foster Pratt, M.D.; and *Means of Promoting the Public Health*—Rev. I. Morgan Smith. The discussions on the papers presented were participated in by a large proportion of the attendants, irrespective of professional education. Mr. Allen's paper will be found on other pages of this number. Others will follow hereafter.

Professor Kedzie's Retirement.—At the regular quarterly meeting of the Michigan State Board of Health, at Lansing, April 12, a letter was received from Professor Kedzie, President of the Board, announcing his decision to decline re-appointment as member of the Board, for the reason that his duties as Professor at the Agricultural College were such as, in the opinion of members of the Board of Agriculture, would prevent his giving that attention to the work of the Board of Health which he had heretofore done. His communication outlined the great progress in public health measures in this State since the organization of the Board eight years ago. He saw with pride that nearly every city, village and township in the State now has its Board of Health and health officer. The forces which are thus set in motion are not temporary in their influence, but will flow on in a stream of blessings to the end of time.

In bidding farewell to the State Board of Health, Dr. Kedzie gave the assurance that he did so with the kindliest feelings towards all its members, and with an earnest wish for its highest prosperity and usefulness.

Resolutions were passed expressing extreme regret at the necessity which compelled Dr. Kedzie to decline to serve longer with the Board; also, expressing the high appreciation of the Board for his eminent labors. The election of his successor as President was postponed until the next meeting of the Board.

Third Annual Report of the Board of Health of Augusta, Ga., 1880, contains, besides the usual summary of sanitary work and results for the year, two instructive papers on sanitary science—Registration and Sanitation by Henry F. Camp-

bell, M.D., Chairman of the Committee on Epidemic Diseases, etc., Georgia State Board of Health; and The Prevention of Disease, by the late George Derby, M.D., Secretary of Massachusetts State Board of Health (Reprint from first annual report of Massachusetts State Board of Health). Population *estimated:* "White, about 14,500; death rate per 1,000, 18.62. Colored, about 10,500; rate per 1,000, 29.90=25,000—23.36 per 1,000." But by recent census, 23,023; the actual ratio is 25.36; the total number of deaths being 584. The chief causes of death were: consumption, 75; acute lung diseases, 61; diarrhœal diseases, 76; typhoid fever, 14; other fevers, 38; convulsions, 53—all children; heart diseases (not specified), 25; congestion of brain, 23; dropsy, 22; debility, 18; premature birth, 14; diphtheria, 9; unknown, 24.

The ages of decedents are not given, but the President of the Board calls special attention to the large ratio of infantile mortality, which may be taken as a measure of the general prevalence of unsanitary conditions. Defective drainage and sewerage, and surface filth, have been the chief care of the Board.

The report is a creditable one to the Board, who, while felicitating the city on its freedom from epidemics throughout the year except dengue—of which there were but three deaths—are by no means unmindful of the suggestions of the category of fatal diseases in their relation to preventable causes, which are urged upon the attention of the city council, as a constant source of danger to the public health.

Rhode Island Twenty-seventh Registration Report, 1879, 8vo, pp. 154, prepared by Charles H. Fisher, M.D., Commissioner of Public Health and Registrar, sums up the general results:

Births (including 216 still-born) 6,350; *Marriages*, 2,396; *Deaths*, 4,472. The ratios to population were: of births, one in every 43.6; marriages, one in every 57.8; deaths one in every 61.9, or 16.2 per 1,000. The chief causes of death were: consumption, 637; other lung diseases, 313; diphtheria and croup, 355; diarrhœal diseases, 266; apoplexy, 137; heart diseases, 194; typhoid fever, 101; scarlet fever, 311; old age, 220.

Of births there were 364 less than in 1878. The ratios to parentage were: American, 43.57; foreign, 40.53; American father and foreign mother, 6.96; foreign father and American mother, 8.94.

"The percentage of children of parents of purely American birth had been gradually lessening . . . for a period of at least twenty years, until in the year 1876 it was less than 41 per cent. . . Since then the births of children of purely American parentage have gradually, though slightly increased." Of still-born there were 32 less than for 1878.

Marriages were 72 more than in 1878: and of mixed marriages—American and foreign—a larger number than ever before reported.

Of divorces, the number of applicants was 255—three less than in 1878, but 246 were granted—50 *more* than in 1878. The report in detail is fruitful in conclusions deduced from a close study of the various questions involved in the study of vital statistics and sociology, and reflects much credit on the compiler.

Newport, R. I.—*The Newport Mercury*, although two months after date, has placed THE SANITARIAN under lasting obligations for generously republishing its condensation of impressions abroad in April, of the unsanitary conditions of Newport, and the lukewarmness of the city government on the subject. Sanitary knowledge is proverbially of slow growth, and chiefly because the subject is disagreeable to the persons most concerned, and the more in proportion to the extent of the defects. Nobody likes to be told his house is out of order, his cellar a nidus of rheumatism and pulmonary disease, his drains obstructed or leaky, and his water impure. The very thought of such things is disgusting to some people, and sharply resented. And yet this is the disagreeable duty of the sanitarian. He must ever recognize as a cardinal doctrine of his pursuit that progress in measures for the protection of human life consists in exposing the consequences of their neglect.

Unfortunately for the progress of sanitary knowledge, the public press, in its local relations, too often partakes of the domestic sentiment. Such things as foul cellars and wells poisoned by the leakage of cesspools and privy vaults have acquired such sacredness by long continuance in some places, that they must needs be cherished as strictly private affairs, and nothing said about them, lest the reputation of the place suffer. The *Mercury* seems to have stood in this relation to Newport for the long period of *one hundred and thirty-three years!* Surely THE SANITARIAN has great reason for self-gratulation in turning the *Mercury* from the error of its ways—for winning over such an ally; and with it and its junior help-meet, the *News*, and by the aid of more than "one live man in a village"—the *Sanitary Protection Association*—the public may rest assured THE SANITARIAN will continue its efforts to show that, if Newport would maintain its ascendancy as a sanitary resort, which from natural surroundings it richly deserves, the people thereof must learn to see themselves as others see them.

Efficient sanitary administration is perfectly consistent with public economy; but these relations have for their basis an enlightened comprehension of the value and economy of human life—and its protection is the first duty of every citizen.

Shall Newport be Sewered?—"There is nothing more needed in Newport than a perfect system of sewerage."—Mayor Atkinson, 1872.

"To get rid of the refuse incident to a crowded population is a subject of anxiety and serious concern."—Mayor Slocum, 1874.

"The present condition of the sewerage of the city is manifestly defective. . . The persistent conversion of our harbor into a city dump, or cesspool, will surely prove, in the not remote future, a very seductive invitation to every disease born and nourished by poisonous effluvia."—Mayor Bedlow, 1876–'78.

"In this matter our reputation is at stake, and upon a wise and prompt decision of the question rests very largely our future prosperity."—Mayor Burdick, 1879.

. . . "The subject calls for something more than consideration."—Mayor Slocum, 1880:—Report of Committee on Streets and Highways of the City Council of Newport, Sept., 1880.

New Orleans is to be Sewered!—The *Times* announces the vote of the City Council adopting the Waring system by a vote of five to two. And adds: "The city is to be sewered. We want all the world to know it. The city is to be drained. We want all the world to know it. The city is to be clean, sweet, fragrant with rose blossom and orange blossom, with jasmine and lily-bell, and we want all the world to know it. The city is to be the healthiest on the continent, and we want all the world to know it." We hope so.

The American Medical Association.—Thirty-second Annual Session, at Richmond, Va., May 3–6, 1881. Being prevented attendance by insurmountable causes, we are under obligations to our much esteemed and enterprising contemporary, *The Virginia Medical Monthly*—DAILY EDITION—for report of proceedings. The session, taken altogether, appears to have been a harmonious and profitable one, and the Association entertained in a manner proverbially common to Virginia. The attendance was considerably less than at the previous session, but this was to be expected of Richmond or any other place in comparison with the attractions of New York. The deficiency is particularly noticeable in the Section on State Medicine. The only papers reported as read before the Section were: "The National Board of Health and the International Sanitary Conference," by Prof. J. L. Cabell, of University of Virginia; "Some of the Results of the Tenth Census as Regards Mortality Statistics," by Dr. John S. Billings, U. S. A.; and the "Relation of the State to the Insane," by Dr. C. F. Folsom, of Boston. In the absence of Dr. Reeve, Chairman of the Section, and in place of his address, Dr. Billings, Chair-

man *pro tem.*, read his paper before the general session. Papers were announced on "Cellars," by Dr. A. N. Bell, of New York; the "Necessity and Means of Removing Putrescible Matters from Inhabited Places," by Dr. O. W. Wight, of Milwaukee; which, in the absence of the authors, were referred to the Secretary. Drs. T. A. Atchison, of Nashville; H. A. Johnson, of Chicago, and E. S. Elder, of Indianapolis, were announced to read papers, but they also were absent.

The Section held but two meetings, and "in consequence of the small attendance," adjourned until the next annual meeting. Dr. Wight's paper, and an abstract of the paper on *Cellars* it is our purpose to publish in next number. The proceedings in other Sections we leave wholly to our more strictly medical contemporaries.

Officers elected for the ensuing year:

President, Dr. J. J. Woodward, U. S. A.

Vice-Presidents, Doctors P. O. Harper, Ark.; L. Conner, Mich.; Eugene Grissom, N. C.; and Hunter McGuire, Va.

Secretary, Dr. Wm. B. Atkinson, Penn.; *Treasurer* Dr. R. J. Dunglison, Penn.; *Librarian*, Dr. Wm. Lee, D. C.

Section on Practice of Medicine.—Chairman, Dr. J. A. Octerlony, Ky.; Secretary, Dr. D. J. Roberts, Tenn.

Section on Surgery and Anatomy.—Chairman, Dr. J. C. Hughes, Iowa; Secretary, Dr. W. A. Byrd, Illinois.

Section on Obstetrics.—Chairman, Dr. H. O. Marcy, Massachusetts; Secretary, Dr. C. V. Mottram, Kansas.

Section on State Medicine.—Chairman, A. L. Gihon, U. S. Navy; Secretary, Dr. J. H. Sears, Texas.

Ophthalmology, Otology and Laryngology.—Chairman, Dr. D. B. St. John Roosa, New York; Secretary, J. S. Cohen, Philadelphia, Pa.

Diseases of Children.—Chairman, S. C. Busey, Washington, D. C.; Secretary, Dr. William Lee, Baltimore, Md.

Dentistry.—Chairman, Dr. D. H. Goodwillie, New York; Secretary, Dr. P. W. Brophy, Illinois.

Judicial Council: Dr. S. N. Benham, Penn.; J. M. Toner, D. C.; D. A. Linthicum, Ark.; William Brodie, Mich.; H. D. Holton, Vt.; A. B. Sloan, Mo.; R. B. Cole, Cal.

St. Paul, Minnesota, was selected as the place for the next Annual Meeting; and Dr. Stone was appointed Chairman of the Local Committee of Arrangements.

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending April 23, 1881. **Abbreviations:** c, consumption; a l d, acute lung diseases; s f, scarlet fever; ms, measles; w c, whooping cough; d-c, diphtheria and croup; t f, typhoid and typhus fevers; s p, small pox; y f, yellow fever; ch, cholera; dl d, diarrhœal diseases; c d, contagious diseases.

Atlanta, Ga., 37,421: 12; 2; 29.05.—c, 4; a l d, 4.
Baltimore, Md., 332,190: 133; 49; 20.87.—c, 27; a l d, 13.
Boston, Mass., 362,535: 163; 42; 23.07.—c, 29; a l d, 31; d-c, 14.
Brooklyn, N. Y., 566,689: 246; 91; 22.02.—c, 39; a l d, 34; d-c, 24.
Buffalo, N. Y., 155,137: 65; 24; 21.06.—c, 7; a l d, 11.
Cambridge, Mass., 52,800: 19; 6; 19.03.—c, 5; a l d, 4; d-c, 3.
Camden, N. J., 41,658: 12; 3; 16.04.—
Charleston, S. C., 49,990: 50; 13; 52.02.—s f, 12.
Chicago, Ill., 503,304: 241; 110; 25.00.—c, 27; a l d, 36; d-c, 19.
Cincinnati, O., 255,708: 109; 45; 22.02.—c, 25; a l d, 15; ms, 10.
Cleveland, O., 160,140: 56; —; 18.03.—
Dayton, O., 38,677: 11; 4; 14.08.—
Dis. Columbia, 180,000: 71; 29; 20.05.—a l d, 16.
Evansville, Ind., 29,280: 9; 5; 16.01.—
Fall River, Mass, 49,000: 22; 10; 23.05.—c, 4; a l d, 4.
Hudson Co., N. J., 187,950: 97; 43; 26.09.—
Indianapolis, Ind., 75,074: 35; 12; 24.03.—
Kansas City, Mo., 60,000: — — —
Lawrence, Mass., 39,178: 12; 4; 16.00.—
Louisville, Ky., 123,625: 53; 17; 22.04.—
Lowell, Mass., 59,485: 30; 6; 26.03.—
Lynn, Mass., 38,284: 7; 2; 9.05.—
Memphis, Tenn., 33,593: 37; 14; 57.06.—
Milwaukee, 115,578: 64; 33; 28.07.—
Mobile, Ala., 31,205: 12; 5; 20.01.—
Nashville, 43,461: 17; 14; 20.04.—
Newark, N. J., 136,400: — — —
New Haven, Conn., 62,882: 23; 3; 19.01.—
New Orleans, La., 216,140: 113; 41; 27.03.—s f, 15.
New York, 1,206,577: 780; 293; 33.07.—c, 106; a l d, 132; d-c, 66.
Omaha, Neb., 30,518: 9; 3; 15.04.—
Peoria, Ill., 34,850: 4; 1; 7.01.—
Philadelphia, Pa., 846,980: 423; 134; 26.01.—c, 69; a l d, 53; t f, 19.
Pittsburg, Pa., 156,381: 81; 36; 27.01.—
Portland, Me., 33,810: 16; 3; 24.07.—
Providence, R. I., 104,852: 50; 12; 24.08.—
Richmond, Va., 63,803: 32; 10; 26.00.—
Rochester, N. Y., 89,363: 49; 23; 28.06.—
San Francisco, Cal., 233,956: 70; 24; 15.06.—
Savannah, Ga., 30,681: 21; 3; 35.07.—
Springfield, Mass., 33,340: 10; 5; 15.07.—
St. Louis, Mo., 350,522: 184; 66; 27.04.—c, 29; a l d, 15.
Utica, N. Y., 33,913: 9; 5; 13.09.—
Wilmington, Del., 42,499: 32; 9; 39.03.—s p, 9.
Worcester, Mass., 58,295: 28; 10; 25.00.—

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at latest weekly returns received.

Alexandria, Egypt, 220,000, April 9, 139; 34.01.—dl d, 19.
Amsterdam, Holland, 326,203, April 26, 159; 25.03.—
Antwerp, Belgium, 173,643, Mar. 26, 60; 17.6.—t f, 4.
Barcelona, Spain, 260,000, April 2, 151; 30.02.—
Belfast, Ireland, 174,412, April 23, 100; 29.08.—
Berlin, Germany, 1,123,577, April 16, 516; 23.09.—
Birmingham, England, 400,680, April 23, 153; 19.09.—
Bombay, India, 644,405, Mar. 15, 390; 31.05.—
Bremen, Germany, 112,200, April 16, 53; 24.06.—
Breslau, Germany, 273,000, April 16, 141; 26.09.—
Bristol and Clifton, England, 217,185, April 23, 82; 19.07.—
Brussels, Belgium, 406,638, April 23, 204; 26.04.—
Bucharest, Roumania, 200,000, April 2, 113; 29.04.—
Buda-Pesth, Hungary, 370,370, April 16, 291; 40.09.—
Calcutta, India, 429,535, Mar. 19, 227; 27.05.—
Christiania, Norway, 120.000, April 16, 35; 15.02.—
Copenhagen, Denmark, 235,254, April 19, 105; 23.02.—
Dresden, Saxony, 220,216, April 16, 135; 31.09.—
Dublin, Ireland, 333,401, Mar. 19, 98; 25.00.—
Edinburgh, 233,666, April 23, 100; 22.03.—
Genoa, Italy, 180,625, Mo. of Dec., 395; 27.8.—t f, 10.
Glasgow, Scotland, 601,266, April 23, 265; 22.09.—
Havana, Cuba, 195,437, April 16, 194; 51.08.—s p, 32; t f, 30.
Lisbon, Portugal, 225,152, Mar. 19, 98; 25.00.—
Liverpool, England, 549,834, April 23, 288; 27.03.—
Lyons, France, 342,815, April 16, 160; 24.03.—
Madras, India, 397,552, Feb. 18, 348; 45.5.—s p, 47; "fevers," 82.
Malaga, Spain, 115,882, April 17, 56; 25.01.—
Montreal, Canada, 135,000, April 16, 71; 27.04.—
Munich, Germany, 230,000, April 16, 144; 32.6.—
Paris, France, 1,988,806, April 21, 1,168; 30.06.—s p, 29; t f, 39; d-c, 47.
Rio de Janeiro, Brazil, 330,000, Jan. 15, 195; 30.8.—s p, 4; c d, 8.
Rome, Italy, 305,469, April 9, 163; 27.07.—
Stockholm, Sweden, 169,429, April 16, 91; 29.00.—
St. Petersburg, Rus., 669,741, April 16, 764; 59.03.—
Trieste, Austria, 128,295, Mar. 5, 102; 41.3.—a l d, 26; d-c, 4; dl d, 3.
Turin, Italy, 236,658, April. 9, 136; 29.4.—
Venice, Italy, 141,615, April 16, 62; 22.00.—
Warsaw, Rus. Poland, 357,169, April 16, 142; 27.00.—

Memphis Board of Health Report, for 1880, shows a gratifying state of the public health of that city, as compared with several preceding years hitherto. The public works specially dwelt upon are sewerage, water supply and quarantine. The first and third of these were very fully reported upon by Dr. Thornton, President of the Board, in his paper on *Memphis Sanitation and Quarantine*, THE SANITARIAN, page 49, current volume.

The water supply is described as having been, during the months of December and January, upwards of 100 gallons per head for a

population of 35,000. But less than one-third of this number have water connections, and complaint is made of inadequate supply. The suggestion of great waste follows. This is accounted for by the unusual cold weather which prevailed—the water being allowed to waste in order to avoid the risk of being frozen up.

The water company now has a pumping capacity of 1,000,000 gallons per diem, and purposes to increase it to 12,000,000 by July next.

Surface filth still exists to a troublesome extent, for the want of systematic garbage service and sanitary police, which subjects are urged upon the attention of the city government. The public school buildings are reported to be in admirable condition, and no contagious disease has prevailed to any extent during the year.

Population.—Whites, 17,293; Colored, 16,707—34,000. The total mortality, exclusive of 82 still-born—White, 491; Colored, 563—1,054. Ratio per 1,000—White, 20.38; Colored, 32.55 : 30.00. Chief causes of death—consumption, 155; acute lung diseases, 101; congestive and typho-malarial fevers, 98; diarrhœal diseases, 94; typhoid fever, 17.

Charleston, S. C., Health Report for 1880, is a great improvement upon all previous annual reports of that city, which have fallen under our observation, comprehending an abstract of the laws and ordinances governing the Board and a well organized system of committee work. Two of the important committee reports by Prof. Michel (Chairman of the Committee on Epidemics and Hygiene), on *Water Supply* and *Sewage Disposal,* we have already published (vol. 8, pp. 241 and 486). We have here, besides, report by Mr. D. G. Wayne, Chairman of Committee on *Low Lots;* Capt. J. F. Redding, on *Burial Grounds;* by Prof. Michel on *Surface Privies, Enameled Sanitary Surface Closets,* etc.; by Dr. Wm. H. Huger, on *Public Institutions;* by Dr. J. S. Buist, on *Quarantine,* and several other shorter and joint reports, and of actions thereon, very thoroughly covering the ground of municipal hygiene.

Population	White,	22,713,	Colored,	27,277 =	50,000
Marriages reported for the year	White,	140,	Colored,	128 =	268
Births, including 45 still-born	White,	484,	Colored,	922 =	1,406
Deaths	White,	500,	Colored,	1,121 =	1,621
Deaths, per 1,000 of population	White,	22.01,	Colored,	41.09 =	32.22

Chief causes of death: consumption, 196; acute lung diseases, 107; typhoid fever, 31; other non-contagious fevers, 23; enteritis, 27; whooping cough, 27.

Baltimore:—The Annual Report of Health Department for 1880 shows a slightly greater mortality than for the previous year, though "no epidemic disease has occurred during 1880."—Total number of deaths, 8,043—3,602 under five years of age. The chief causes of

death enumerated are: consumption, 1,221; other diseases of the lungs, 736; heart disease, 248; diarrhœal diseases, 681; convulsions, 367; diphtheria, 293; croup, 173; scarlet fever, 400; typhoid fever, 196; other fevers, 150; whooping cough, 148—a category which would seem to suggest that to "no epidemic" should be added—in particular: for there really seem to have been several.

The ratio of mortality on an *estimated* population of "white, 338,-384; colored, 54,412 = 393,796 : 20.41; white, 18.25; colored, 34.08." But by recent census, 332,190, the total rate per 1,000 was 24.21. *Marriages* recorded, 3,260. *Births*, 8,826.

The chief work urged by the Health Commissioner, in order to place Baltimore in the front rank of healthy cities, is an efficient system of sewerage, distinct from the storm water sewers now in use or in process of construction. "By this means, and by this means only, can the dangerous present system of privy pits be done away with," dangers which the Commissioner has repeatedly urged upon the City Council, as constantly increasing by delay. An abundant and pure water supply is now approaching completion, by which "*all* the city pumps" of foul water will be done away with, and facilities for cleansing and flushing the filthy surface greatly increased.

Few cities in the world as large as Baltimore present better facilities for an effective sewerage system, or better promise for benefit, and with such an increasing ratio of preventable mortality, as the report before us shows, it would be unreasonable to suppose that a city so proud of her ascendency in many other good works will longer rest under the stigma of increasing foulness.

Reading, Pa., Board of Health Report for 1880, on a population of 43,280, reports: Marriages, 557; births (including 69 still-born), 1,325; deaths, 815—18.8 per 1,000. The chief causes of death were —consumption and other tubercular diseases, 103; acute lung diseases, 60; diarrhœal diseases, 57; diphtheria and croup, 54; typhoidal and malarial fevers, 24. The chief work of the year has been the chemical examination of the potable waters of the city—some of which were suspected of impurity on account of foul odors. Of 21 sources of supply, from which samples have been examined, one only —"Mineral Spring"—has been condemned, but this, we infer, is collective, as, according to the report of the examiners, Drs. Stanley Smith and P. M. Ziegler—

"The springs of Lauer's Garden, Third and Chestnut, at Keffer's, Fifth and Spruce, and at Seventh and Franklin, show an enormous amount of free ammonia, which proves them to be contaminated by cesspool drainage"—from 1.06 to 2.14 parts per 1,000,000, and of albuminoid ammonia .10 to .12 per 1,000,000.—"Mineral Spring": Free ammonia, .37, and albuminoid ammonia, .32.

Literature.

***Wilson's Easy Lessons in Sanitary Science** is an illustrated book, adapted to the commonest wants of country medical practitioners, gentlemen and farmers. It describes the conditions of soil which give rise to malaria, and tells how to get rid of them; distinguishes well between healthy and unhealthy building sites; healthy and unhealthy houses; points out the dangers of modern house conveniences, if not properly placed and taken care of, and gives sound instruction in regard to their placement, common defects, and remedies; and concludes with an excellent chapter on plumbing, of use to everybody who would avoid its dangers. The author is no stranger to the readers of THE SANITARIAN, and a reference to his contributions, volume second, will increase the inducements for the possession of this book.

Food for the Invalid† is a valuable contribution to the dietary of invalids not only, but for the well; and especially for the excellence of the introductory chapter on the physiology of digestion, so concisely and plainly written as to be easily understood by the general reader, and yet so scientific and comprehensive as to be of much value to every medical practitioner. Most of the biliousness and indigestions, and much of gout, pulmonary disease and other grave affections are very justly ascribed to the growing incapacity to digest fat, commonly brought about by the want of such knowledge as may be gained from this chapter. "Nursery food," "food for the invalid in bed," and "food generally," have their appropriate places, and much pains is taken throughout, to show how food containing fat may be made acceptable to the palate and easy of assimilation by the digestive organs. The receipts, of which there are 298, are designated with regard to their economy, special application for invalids according to their diseases, for the convalescent and the nursery, and are for the most part, judiciously chosen, and easily prepared.

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* Drainage for Health; or, Easy Lessons in Sanitary Science. By Joseph Wilson, M.D., Medical Director U. S. Navy. 8vo., pp. 68. Illustrated, $1.00. Philadelphia: Presley Blakiston.

† Food for the Invalid; the Convalescent; the Dyspeptic, and the Gouty. By J. MILNER FOTHERGILL, M.D., Edin., Member of the Royal College of Physicians, of London, Associate Fellow of the College of Physicians, of Philadelphia, etc., etc.; and HORATIO C. WOOD, M.D., Professor of Materia Medica and Therapeutics, and Clinical Professor of the Diseases of the Nervous System in the University of Pennsylvania; Member of the National Academy of Science. 12mo, pp. 157. Price $1.00. New York: Macmillan & Co.

Jacobi's Treatise on Diphtheria* is the most complete, because the least redundant, work on that disease hitherto published, and, we hardly need add, considering the author's well-known opportunities and learning, comprehends the clearest conclusions in regard to the present state of scientific knowledge in regard to the nature of diphtheria, its pathology and treatment. Unsettled questions are left still "under discussion," while the labors of contemporary students are closely analyzed, all definite results given and duly credited. The work is divided into nine chapters, treating of the history, etiology, manner of infection, contagion and incubation, symptoms, anatomical appearances, diagnosis, prognosis and treatment, and a summary is added at the close of each chapter. Dr. Jacobi still regards the parasitic origin of the disease as "not proven." "Filth contributes to the generation of diphtheria as it does to dysentery and typhoid fever." The ninth chapter, on the treatment of the disease, is the fullest, as it is the most important. Alcohol is regarded as a very important adjuvant and remedy, and nourishment of the utmost importance. It is a book which few practitioners can afford to do without.

The Bacteria.†—Dr. Sternberg has done the medical profession, and sanitarians especially, an excellent service in translating the only systematic treatise on bacteria—systematic so far as exact knowledge will yet admit of—hitherto published. For, notwithstanding the subject has long since ceased to be a new one, and much has been written on it, theories and opinions constitute the mass, and facts susceptible of logical induction, only sufficient to make this little, but deeply interesting 12mo volume of 227 pages, including preparatory chapter and thirty-two pages of bibliography, and three photo-micrograph plates by the translator—reproduced from his recent investigations in Havana and New Orleans.

The volume is, besides, illustrated by seven other plates, showing the different forms of bacteria as represented by the author, Drysdale and Dallinger, Pasteur, Cohn and Koch. The conciseness of the work is a special merit. There has been so much redundant non-

* Treatise on Diphtheria, by A. Jacobi, M.D., Clinical Professor of Diseases of Children in the College of Physicians and Surgeons, New York; Physician to Bellevue, Mount Sinai, and the German Hospitals, etc. 8vo., pp. 262. New York: William Wood & Co.

†Bacteria. By Dr. Antoine Magnin, Licentiate of Natural Sciences; Chief of the Practical Labor in Natural History to the Faculty of Medicine of Lyons; Laureate of the Faculty of Medicine of Paris; (Silver Medal, 1876); General Secretary of the Botanical Society of Lyons; Member of the Botanical Society of France, etc. Translated by Geo. M. Sternberg, M.D., Surgeon U. S. Army. Boston: Little, Brown & Co.

sense written about bacteria and the part they play in the causation of disease, that medical practitioners in general have been more befogged than enlightened. And the labor of producing the volume before us has doubtless been great in the inverse ratio to its size—culling out all that is really worth knowing on the subject, and systematically classifying what facts there are as a groundwork for future investigation and progress—a book which no physician or other person who would be conversant with the relations of bacteria to disease so far as really known can afford to do without.

Diseases of the Skin, as a special branch of medical practice, have, of late years, had many votaries, but few leading spirits. Three years ago we had occasion to notice the first edition, or, it may be more properly said, the draft of the work now before us,* for so thorough is the revision and elaboration of that work in this "second edition" as to make virtually a new book, and yet the volume is but very little larger than the first, while much—indeed, everything of practical importance in this class of diseases—has been added. For these important additions room has been made by stripping the text of every possible redundancy, and thus furnishing increased evidence of the thorough mastery of the author, and adding a new charm to the style of the work. The mechanical execution of the work is, in all respects—stock, type, illustrations and binding—excellent. As a comprehensive, concise and practical guide in the treatment of skin diseases, it is the best book in the English language.

Insane Criminals.—By the Twenty-first Annual Report of the Medical Superintendent (Dr. Theodore Dimon) of the State Asylum for Insane Criminals, Auburn, N. Y., for the year ending September 30, 1880, it appears there are of this class of life convicts in the State of New York about 122, 17 of whom are in the Asylum at Utica. The total number of insane in the New York State Prisons is 2,900. The life sentence insane constitute a little over 14 per cent. of the life convicts, a little over 18¼ per cent. of the whole prison insane, and four and one-fifth per cent. of the State prison population. The number whose sentences exceed ten years is 447, 22 of whom are in the Utica Asylum. The number of convicts whose sentences are from five to ten years is 886; their insane is 32 per cent. of the whole, and three and four-tenths per cent. of themselves; while the insane whose sentences are for less than five years, are twenty-six and one-twelfth

* A Practical Treatise on Diseases of the Skin; by Louis A. Duhring, M.D., Professor of Diseases of the Skin in the Hospital of the University of Pennsylvania; Dermatologist to the Philadelphia Hospital; Consulting Physician to the Dispensary for Skin Diseases, Philadelphia; Author of "Atlas of Skin Diseases," etc., second edition, pp. 644. Philadelphia: J. B. Lippincott & Co.

per cent. of the whole number, and one and four-tenths per cent. of themselves. In short, about one-half the prison population with five years and less sentences, contribute but twenty-six and one-twelfth per cent. of the insane, while the life and other long sentences contribute seventy-three and eleven-twelfths per cent., and the ratio of insanity is found to uniformly increase with increase of length of sentence.

An analysis of the habits of life of 574—the number admitted since the institution opened in 1859—shows: temperate, 125; intemperate, 256; moderate, 136, and unascertained, 57. Of the degree of education: classical, 4; academic, 5; common school, 135; read and write, 253; read only, 35; no education, 142. Mortality, 67—from consumption, 21; from other causes, 1 to 4; unascertained, 13.

The condition of the sewerage and underlying soil is described as abominable and dangerous, and the walls greatly in need of repair.

Harper's Magazine for June—the beginning of the sixty-third volume—is a brilliant number. It is not more attractive from the artist's point of view than it is impressive in a literary sense; having contributions from the best writers in every one of the many fields covered by its contents.

Aphorisms in Fractures, by Richard O. Cowling, A.M., M.D., Professor of Surgery in the University of Louisville, a little pamphlet of sixty-six pages, is just such a pocket book as all young practitioners ought to carry, in order to make themselves thoroughly familiar with the practical knowledge essential to success. Price 25 cts. John P. Morton & Co., Louisville, Ky.

Constipation Plainly Treated, by Joseph F. Edwards, M.D., is a well gotten up little book of seventy-two pages, which contains just such information as everybody ought to possess in order to be healthy and happy. Price 75 cents. Philadelphia: Presley Blakiston.

Publications Received.—Maclagan's State Medicine and the Compulsory Registration of Disease; Annual Report of Astor Library; Henderson's Hand-Book of Plants—Peter Henderson, New York; New Haven Board of Health Report; Letter of the Pres. of Board of Health of New Haven to the Common Council—Wm. H. Brewer; Dr. Joseph Holt's Defense of the Principle of Organized Effort in the Sanitation of New Orleans; Statistical Report of 252 cases of Inebriety treated at the Inebriates' Home, Fort Hamilton, L. I.—Lewis D. Mason, M.D.; How We Fed the Baby, by C. E. Page, M.D.—Fowler & Wells, New York; Case of Mutton-bone Impacted in the Trachea: Successful Tracheotomy for its Removal—F. W. Rockwell, M.D.; Prisons and Public Charities of Tennessee—Report of Com-

mittee of the State Board of Health; Shortening of the Limbs in Fracture—Lewis A. Sayre, M.D.; Asylum for Feeble-Minded Children at Lincoln, Ill.—Eighth Annual Report; Relations of the Marine Hospital Service to Commerce, etc.—Committee Report of Cal. State Medical Society; Trance in the Lower Animals—G. M. Beard, M.D.; State Lunatic Asylum, Utica, N. Y.—Thirty-eighth Annual Report; Warman's Second German Book—A. S. Barnes & Co.; Library Aids—Bureau of Education; Transactions Med. Soc. State of New York.

Foreign Journals:

La Independencia Medica Semanario, destinado especialmente a defender las intereses Cientificos, Morales y Profesionales del Cuerpo Médico Méxicano. Condiciones.—Este semanario aparecerá los dias 1, 8, 15, y 22 de cada mes.—La suscricion vale en México: por meses 37½ centavos y por un año 3 pesos. En el extranjero, valdrá tres centavos mas, cada numero, franco de porte. Todo Cambio dirijase al 10 de 1ª, calle de San Ramon, casa del Director. México.

El Medico y Cirujano Centro-Americano.—Publicacion mensual de médicina, cirurjia y los ramos colaterales. Propietario y Redactor: Ferd. C. Valentine, Doctor en Medicina. El precio de suscricion de El Médico y Cirujano es de tres pesos anuales, pagaderos adelantados por giros ó sellos postales. Contributors, Exchanges, etc., are respectfully requested to address all mail matter to the agents of "*El Médico y Cirujano Centro Americano*," Valentine Brothers, 71 Broadway, New York.

Bulletin du Canal Interoceanique. — Paraissant le 1er et le 15 de chaque mais.—Bureaux: 9, rue Charras (ancienne rue Clary) Paris. Abonnements pour tous Pays: Un an 4 francs. Six mois 2 francs. On s'abonne à ce Bulletin, seule publication ayant l'attache de la Compagnie, 9, rue Charras.

El Monitor de la Salud Revista Quincenal de Higiene Publica y de Higiene y Medicina domesticas, con seccion especial dedicada a los niños enfermos. Publicada por la Enciclopedia Médico-Farmacéutica, baja la direccion del Dr. D. Carlos Ronquillo. El Monitor de la Salud saldrá el primer y tercer jueves de cada mes. Precio de suscricion es de 20 rs. el semestre en Barcelona, 24 fuera de id. y 68 al año en el estrangero y Ultramar Redaccion y Administracion Córtes (Gran via) 289 y 291 Ensanche Barcelona.

La Reforma Medica.—Organo del Instituto Homeopático Méxicano. Publicacion mensual. Dirigirse a La Alcaiceria núm. 19, Mexico.

Uniao Medica.—Publicaçao Mensal.—Redactores. Drs. Cypriano de Freitas, Julio de Moura, Silva Aranjo, Moura Brazil and Moncarvo. Vol I.—No. 1.—January, 1881. Rates of subscription: one year, $12.00, six months $6.00. In the provinces: one year, $14.00, six months, $7.00. These prices are understood to be in Brazilian currency. All correspondence should be addressed to Dr. Moncarvo, 93 rua da Lapa, Rio de Janeiro.

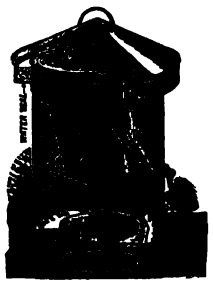
La Emulacion.—Periodico de la Sociedad Médico-Farmacéutica. Tomo IV.—No. 1.—Redactor en Jefe Juan Dondé, R.—Administrador: J. R. Sauri. Merida de Yucatan. Imprenta de la libreria Meridiana de E. G. Canton. 1881.

SANITARY MISCELLANY.

Ocean Travel, comprehending luxuries never before equaled, is now at its height. With New York as a point of departure, the wanderer for health or pleasure who would start by sea, may turn whithersoe'er he will with naught to disturb his peace of mind, save possibly the thought of sea-sickness—perchance he has escaped knowledge of Dr. Beard's book. But this he should read *before* he sails, to intensify his enjoyment in anticipation. For reading matter by the way—solid reading matter, we mean—it is not best to lay out much. THE SANITARIAN always—this number for example—what can be more delightful or seasonable than Dr. Turner's paper on Arctic Hygiene in mid-summer? And various other articles which will tell the traveler how to live, and what to avoid. Harper's, Scribner's, The Atlantic, Appleton's, Lippincott's, Popular Science, and the latest number of the Home Journal, to tell you where to go, what to see, and how to be seen, will be quite library enough for any voyager outward bound. Anything more than this is likely to disturb the delightful harmony of the surroundings. Enjoyment begins with the luxuries of the ship. Of its safety, no matter what the weather—in anticipation or reality—that's none of your business, you are only a passenger; "the bo'sun and the ship's crew" will take care of you. And passengers on board ship should always bear in mind that they are for the time out to nurse, but in the care of the best of nurses, *wet* nurses though they sometimes are. For when traveling by any one of the magnificent steamers advertised in this number, you will find yourself in a kind of perambulator; only the nursemaid at the wheel is the carefulest of all nurses; he never gossips with passers-by nor "carroms" against other carriages. Dr. Johnson cynically defined a ship to be "a prison, with the chance of being drowned." But what did Dr. Johnson know about ships? There were no Cunarders in his day. And these are the type of the class to which we refer:—The Cunard, the Inman and the Guion Lines; the Quebec Steamship Company's Lines; and the magnificent coasters of the New York and Savannah, and the Old Dominion Steamship Companies—of all these, it may be said, they are cheerful, hospitable, elegant, and, humanly speaking, the traveler may enter upon his voyage by any one of them with a certainty of being carried with safety to his appointed place, with such an agreeable send-off as will be quite sure to invite a welcome return.

Summer Resorts are innumerable, yet in great demand; but for the length of the roll, it would be easier to name those which should be avoided, than those which should be chosen as dwelling-places for any considerable length of time. Of the few in the interior, where the weather is cool and the drainage carefully looked after, the Sanitarium, at Battle Creek, Mich., under the careful superintendence of Dr. Kellogg, is among the most commendable; Drs. Walter's Mountain Park Sanitarium, near Reading, Pa., is also a delightful retreat, with intelligent supervision of all the surroundings. Of sea-side resorts in general, there is so much *hid away,* and so little of dangerous material absolutely destroyed, it is hard to speak of any in particular with absolute certainty—all need scrutiny. Of Long Beach,

its grand hotel and cottages, now in process of completion, the drainage approaches nearer perfection than any other with which we are acquainted; and there, also, action is now being taken to provide for the effectual disposal of garbage—both hotel and cottage—*as it accumulates*—before putrefaction and its attendant dangers can possibly take place—by adopting the use of the



Domestic Garbage Burner—a method and apparatus commendable not alone for hotels and summer resorts, but to every city household. It consists of a pail for the reception of the garbage, provided with a set of perforations, and with a dumping bottom which can be closed to hold the charge or opened to dump it when dried, by turning the crank seen in the cut. This garbage pail is suspended within an outer cylinder having a circular opening in its base, and a close cover whose edge dips into a water-seal. To use this apparatus, it is placed over one of the openings of the range. The dumping bottom of the pail is closed by raising the crank and putting the ring over the handle, the garbage is emptied into the pail, the water-seal filled, and the cover put on. After half an hour or so, more or less, according to the nature and quantity of the garbage and the heat of the range, the contents of the pail will be found to be sufficiently dried, and may be dumped into the fire and burned by releasing the crank-handle from the ring. During the drying of the charge, the contents of the pail are hermetically sealed within it, and none of the vapors find their way out of it; consequently no unpleasant odors are given off during the operation. Extra large sizes are made to fit the largest ranges or for separate use on Globe stoves.

The New York Lawn Mower we take special pleasure in recommending for ladies' and children's use, because so free from complication and so admirably combining the benefits of exercise. Moreover, it can be used on terraces and banks, where other lawn mowers cannot be. Its simplicity and cheapness commend it to all persons who delight in handsome lawns and velvety door-yards.

The Electro Medical Apparatus, advertised by the Jerome Kidder Manufacturing Co., ought not to fail to attract the attention of medical practitioners—all who would possess themselves of the best electrical instruments made.

Food Preparations.—Ridge's Food for Infants and Invalids, Delacre's Chocolate, the Royal Baking Powder;—the deservedly popular medicines of Hazard & Caswell, the New York Pharmacal Association, Fellows' Hypophosphites, Dr. Crosby's Brain and Nerve Food;—Reich's Wines, The Butler Health Lift, Platt's Chlorides, The Molière Thermo-Electric Baths, the well-recommended Summit Mineral Spring Water, Borax Soaps, Eagle Odorless Apparatus Co., and several other advertisements, which the want of space forbids a more extened notice of in this number, are worthy the attention of all readers.

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SOIL AND WATER POLLUTION IN INDIANAPOLIS.

By Moses T. Runnels, M.D., Indianapolis, Indiana.*

Zymotic or preventable diseases are increasing in Indianapolis. From these diseases 443 deaths occurred in the city during the year 1879—over 32 per cent. more than in 1878—and if such a large number died, it is fair to calculate that twenty times as many persons were more or less sick from the same causes. Nearly 33 per cent. of the total deaths of the city last year were due to zymotic diseases. These facts should awaken the public to thorough search for the causes at work producing such a high mortality.

The increase of zymotic diseases in Indianapolis is due largely to soil and water pollution. The conditions of the soil affect our health through the water we drink and the air we breathe. To effluvia from the soil may be attributed, as stated by Parkes, paroxysmal fevers, typhoid fever, yellow fever, bilious remittent fever, cholera and dysentery.

A cold soil, and a misty, chilly condition of the atmosphere are caused by large amounts of water in the ground; and persons living on such soil are disposed to catarrhal complaints, rheumatism and neuralgia. Dampness of the soil produces malaria and consumption, and their activity varies with the degree of moisture.

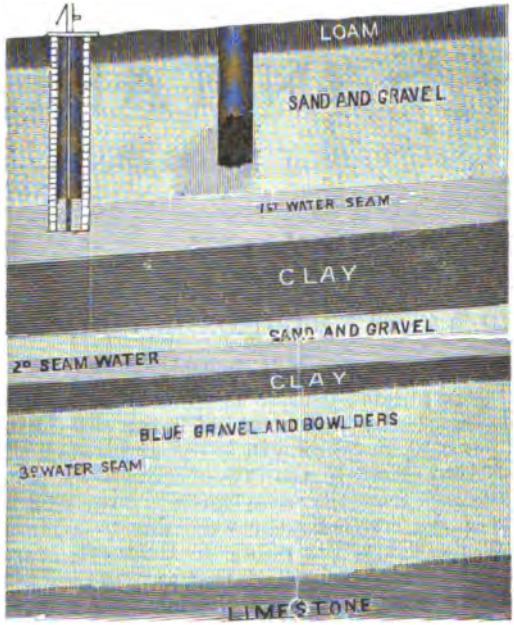
The soil is so damp in Indianapolis that houses built close to the ground are known to be very unhealthy. At least four-fifths of all the houses in the city are too near the ground.

The popular impression, that the atmosphere ends where the ground begins, is a very widely spread delusion. Most soils are more or less porous. A house built on gravelly soil stands on a foundation composed of a mixture of two parts of small stones and one part of air. The air may give place to any gas or to water. Zymotic dis-

* Abstract of paper presented to the American Public Health Association, New Orleans, December, 1880.

eases have been known to arise from the emanations of soil polluted by excreta, and impurities from sewers and drains and all other filth. Poisoning by breathing the gases generated in sewers and cesspools is not uncommon.

Indianapolis is in the bottom of a basin, the rim of which rises sixty or seventy feet all around it, east of White River; in some places, as at Crown Hill, to three time that height.



The general direction of the water trend is from northeast to southwest; the water level in the wells near the Atlas Works is thirty-five feet above the river level at the city water works; and the waterfall is from fifteen to eighteen feet per mile. The formation of the ground beneath the city is attributed by geologists to the glacial drift of pre-historic times. From seventy to ninety feet below the surface the earth is built up of alternate beds of sand, gravel and clay, and go to show that at some remote period running water, with its leveling and transforming power, aided by the corroding force of the air, contributed largely to the geological formation which we find to-day.

After obtaining the distances through these various strata in the different parts of the city, an average is calculated in the following order:

Loam, three to four feet; sand and gravel, thirty to forty feet; blue compact clay (hard pan), twelve to eighteen feet; sand and gravel, five to ten feet; soft clay, one to five feet; and blue gravel and boulders to Devonian limestone, thirty-five to fifty feet. The first stratum of clay is very hard and tough, and for that reason is called "hard-pan." It has an inclination from the northeast to the south-

west of about thirty feet to the mile. The further north and east of White River, the less distance it is to bed rock. Occasionally below the "hard-pan" is found a small drift of soft clay, but this is not usual, and does not extend very far in area; often in moving ten feet it is missed. The first seam of water is usually reached at a depth of seventeen to twenty-five feet; the second seam at fifty to sixty-five feet; and the third seam at seventy to ninety feet.

Area of Indianapolis (not including ground unimproved), 5,000 acres. Within the city limits there are: surface dug wells, 15,000; driven wells, 5,000; open privy vaults, 22,000; privy vaults filled up, 13,000; cesspools, 10,000; cesspools filled up, 5,000.

The builders of the city state, that in the business portion of the city, it is not uncommon to discover from three to a half dozen old privy vaults, in making a single excavation for an ordinary building.

According to the above estimate, which is considered very low, 50,000 privy vaults and cesspools are constantly filling the soil with deadly poisons, and polluting the water of at least 15,000 surface-dug wells, which furnish drinking water to 50,000 people.

Not more than 6,000 persons drink water from the city water-works, and about 20,000 persons use water from driven wells and cisterns. It is a rule well established by eastern Boards of Health, that a dug well drains a circular area with a radius equal to twice the distance of the depth of the well.* It has been ascertained that a very large number of the wells of the city are situated within an average distance of less than thirty feet of cesspools and privy vaults, while a great many are distant from them not over ten feet. Most wells are dug simply with the view of obtaining water and of having it as convenient to hand as possible; the cesspools are dug similarly, with a view to convenience, except that the demand here is that the liquid contents shall readily drain away. Provided the well furnishes an abundance of water, and the cesspool allows the liquid refuse to soak away, and on this account seldom requires cleaning out, there is little concern as to what goes on unobserved beneath the surface of the ground. In the course of time the well-water is discovered to be impure, after sickness, and perhaps death, have followed its use.

Wells situated on street corners, in close proximity to the catch basin of the sewers, are extremely liable to pollution from leakage from the foul gutters and seepage from the catch basins.

A great many citizens of Indianapolis are drinking water exclusively from cisterns. The majority of the cisterns in the city are faulty in some particular—either proper care was not exercised in their construction, or the necessary repairs were not made in due time—and they are found to be seeping, or leaky. Many of our cisterns contain water rank with impurity, and the contents of the greater portion of these are not above suspicion. Some of them are neither more or less than shallow wells, receiving more of their contents by percolation than by inflow above.

In the year of 1879 there were seventy-eight deaths from typhoid

* In loose soil, the area frequently extends to five feet or more, for every foot of depth.—EDITOR.

and typho-malarial fevers in Indianapolis. It may be stated as a probable fact, that our siege of fevers in 1879 originated and was afterward propagated in polluted drinking water, and ill-ventilated apartments poisoned by sewer gases, or in close proximity to foul and overflowing water-closets and cesspools. Deaths from these causes occur more or less at all ages, but distinctively more among children. The influence of filth causes the infants and young children to die at twice, or thrice, or four times their fair standard rate of mortality; and this disproportion seems to mark the young lives as finer tests of soil and water pollution than are the acclimated adults. The Board of Health of Indianapolis report that hundreds of cellars are full, or partly full of water, the entire year; and that the increase of zymotic diseases is due largely to wet and damp cellars, as well as to the long continued and general practice of covering up foul privy vaults, after they have become full, to save the expense of removing the contents.

Being thoroughly impressed with the facts above enumerated, I employed a competent chemist, Mr. Jno. Hurty, to make examinations of water, and assist me in the work.

In the collection of samples of water, special care was exercised in regard to cleanliness and to avoid introducing any errors into our examinations. Below I give a tabular statement of the analyses of waters taken from surface-dug wells in the city. Excepting the permanganate of potash test, the quantities are in one litre (22-100ths of an imperial gallon):

	Total Solids.	Matter, Organic & Volatile.	Chlorine.	Permanganate Test.	Albuminoid Ammonia.	Free Ammonia.	REMARKS.
	Gramme.	*Gramme.*	*Gramme.*	*Drops.*	*Gramme.*	*Gramme.*	
Sample 1.....	.81	.090	.11	30	.0024	not obt'd	Very bad.
" 2.....	1.061	.179	.06	24	.00015	.00009	Suspicious
" 3.....	1.26	.29	.115	38	not obt'd	not obt'd	Very bad.
" 4.....	.94	.131	.093	22	not obt'd	not obt'd	Bad.
" 5.....	.89	.055	.032	11	.00009	.00001	Suspicious.
" 6.....	.964	.098	.08	15	.00011	.00001	Suspicious.
" 7.....	.798	.178	.104	28	.00089	.00005	Very bad.
" 8.....	.37	.025	.049	12	.0003	.0004	Suspicious.

In regard to the wholesomeness or unwholesomeness of water, Watt's Dictionary of Chemistry gives the following: "Water suitable for economical, technical or culinary purposes should not contain of solid constituents to exceed five-tenths of a gramme to one gramme per litre. Water containing one-tenth gramme per litre of organic matter is unfit for culinary purposes or drinking. Wholesome water should not contain of organic matter more than five one-thousandth to one one-hundredth gramme per litre. As a rule, water containing as much as one one-hundredth of a gramme of chlorine per litre may be suspected of being contaminated with drainage. Whenever in water the oxygen amounts to less than one-third of the nitrogen, and the water also causes a considerable reduction of permanganate of potash, the presence of decomposing organic substance is probable. The capability of water to remain for some days at a temperature of about 22° C., without undergoing decomposition, is of great importance in reference to the question of wholesomeness."

The first sample of water was taken from a well where fourteen persons were simultaneously attacked in December last by typho-malarial and diarrhœal diseases. All had been drinking water from this well, and had it not been for the timely help of the physician who condemned the water, serious results would have followed.

On examination the cesspool was found to be connected directly with the well by a pipe, and when the cesspool became full, its contents regurgitated into the well. The Board of Health examined the premises, condemned the well and ordered that both privy vault and cesspool be cleaned out without delay. I understand that it is quite common in this city to connect the cesspool with the well by a pipe so that the waste water may be readily conveyed away; but if people knew the danger to be feared from such an arrangement, greater care in the construction of drains would be exercised. Hundreds of cases might be related where, in houses fitted with all that taste could desire and gold procure, a syphoned trap, or, in the absence of a trap, an imperfect joint, or an old brick drain, or riddled soil pipe, defects easily remedied if known to exist, have undermined the health of adults and slain the little ones. In the first sample a large quantity of animalculæ were revealed by the microscope. Fox states that "the existence of animal life in a water affords good evidence in itself of the presence of a very sensible amount of organic matter, *alias* filth. These little creatures feed and flourish on what we call organic matter, and in perfectly pure water they cannot live. A perfectly pure water contains no suspended matter nor any animal or vegetable life. The ova of the round and the thread worm, the eggs and joints of the tapeworm and small leeches, which may give rise to grave disorders, should not be forgotten in making microscopic examinations of drinking waters."

The well from which the second sample was taken was within twenty-five feet of a privy vault twenty feet deep. Several families used water from the well. Two cases of typhoid fever developed in one family, and all the persons who drank the water were constantly ailing. The third sample was taken from a well where four cases of typhoid fever had occurred. A thorough search had been made for the cause of the trouble. The well water had been suspected and was condemned by the attending physician.

Seventy feet from the wall there was a privy vault overflowing. Another vault was within twenty-five feet of the well. To the effluvia from the former was attributed one case of typhoid fever. The stench was so great at night that not even the windows in the upper stories of the houses in the neighborhood could be kept open. People living near had sore throats, malarial fever and diarrhœal disorders.

The fourth sample was obtained from a surface-dug well, from which the inmates of the State Female Reformatory were supplied with drinking water. Since the first of last August thirty-nine cases of well-defined typhoid fever, and thirteen milder cases of the same disease appeared in the Reformatory. The attending physician attributed the outbreak of the fever to the water from the well. After a thorough chemical examination of the water, the well was condemned and filled up, and the water supply now comes from a driven well.

It is worthy of remark that the persons attacked by typhoid fever had been daily drinking the foul water from the well until the appearance of the fever; that the immediate surroundings of the well and the sanitary condition of the building were good, and that no direct cause of typhoid fever outside of the well could be discovered.

The fifth sample was taken from a well which supplied a family of six persons with water. Diarrhœal troubles, symptoms of typhoid fever, sore throats, etc., were not uncommon, and the family physician was frequently consulted. One privy vault forty feet north from the well was full. Another privy vault was fifty feet northeast of the well. The contents of the vaults undoubtedly contaminated the well water to some extent, and of course the evil would be increased with time.

The sixth sample was drawn from a well on the south side of the city. No privy vault or cesspool is located within fifty feet of it. To all appearances the surroundings are good. The well water has been used for drinking purposes for several years. One person in the family had typhoid fever three years ago, and malarial and bilious attacks have annoyed the other members of the family frequently.

The seventh sample was obtained from a well from which three cases of typhoid fever had previously been supplied with water. The attending physician attributed the development of the disease to the unwholesomeness of the water.

The eighth sample was obtained from one of the wells at the water works.

The following table gives the analyses of waters from *driven wells* extended below the first or second stratum of clay. These wells are located in different parts of the city. Excepting the permanganate of potash test, the quantities are in one litre:

	Total Solids.	Matter, Organic & Volatile.	Chlorine.	Permanganate Test.	Albuminoid Ammonia.	Free Ammonia.	REMARKS.
	Grammes.	*Grammes.*	*Grammes.*	*Drops.*	*Grammes.*	*Grammes.*	
Sample 1.....	.400	.012	.008	10	.000045	none	Good water.
" 2.....	.586	.028	.004	12	.00005	none	Good water.
" 3.....	.699	.047	.025	9	none	none	Excellent.
" 4.....	.496	.08	.006	10	none	none	Excellent.
" 5.....	.454	.069	.038	9	none	.0001	Excellent.

I have in my possession partial and complete analyses by Prof. E. T. Cox, of waters from nine other driven wells in the city. The analyses show that these wells furnish good potable water.

The occupants of large buildings are often supplied with water from tanks on the upper floors. If the tanks are not properly constructed and well inclosed, the water pumped into them may be contaminated at any time by impurities.

Given below are analyses of waters drawn from tanks in large blocks. The quantities are in one litre:

	Total Solids.	Matter, Organic & Volatile.	Chlorine.	Free Ammonia.	Albuminoid Ammonia.	REMARKS.
	Grammes.	*Grammes.*	*Grammes.*	*Grammes.*	*Grammes.*	
Sample 1.....	1.032	.14	.09	.00004	.00012	Bad.
" 2.....	.554	.089	.075	.00015	.00009	Good.

One person who lived in the former block died of typhoid fever, and many others had sickness from the use of the water.

To economically furnish water in ample quantity, is an object of great importance; but it is of more consequence that the water obtained is not contaminated by sewers, cesspools, and surface drainage to such an extent that disease and death shall be scattered broadcast among those who drink the water.

To show how disease may be transmitted in dilute sewage, and that disease germs are not exterminated by diffusion through a large body of running water, Dr. E. D. Mapother, of Dublin, reports forty cases of typhoid fever occurring in a hospital which received its supply from a river. The cause was traced to some barracks twenty-five miles higher up, from which typhoidal dejections had been emptied through drains into the river.

The following report is from Prof. Thos. C. Van Nuys, of the State University:

BLOOMINGTON, Ind., May 10, 1880.

The water you sent on Thursday was received on Friday evening. The following is the report of my chemical and microscopic examinations:

In one litre (1,000 cubic centimetres).

Nitric acid anhydride, N2, O5	10.72	milligrammes.
Ammonia, NH3	0.03	"
Carbonic acid anhydride, CO2	0.439	gramme.
Calcium oxide, Ca, O	0.148	"
Magnesium oxide, Mg, O	0,04128	"
Chlorine	0.09218	"
Degree of hardness (English)	25.7	

The organic matter in 100 cubic centimetres of the water required 3.11 cubic centimetres of the 1-100 normal solution of potassium permanganate to oxidize it; therefore one litre of the water would require 31.1 cubic centimetres of the 1-100 normal solution K Mn O4 to oxidize the organic matter. In 31.1 c. c. of this solution there is 0.0098 gramme K Mn O4 or 0.0247 gramme oxygen liberated. I would remark here that there is no method of estimating the exact quantity of organic matter in water. The method of estimating the carbon and hydrogen by combustion analysis (Frankland and Armstrong's) has been found defective—also the methods based on the estimation of nitrogen and reduction of silver oxide. The method employed in this case (Schultze's) is the most reliable, and yet not all the organic matter is oxidized, for some is volatized in boiling.

I found the following infusorial animalculæ: Stylonchia pustulata, actinurus neptunius, rotifer vulgaris, monosty la quadridentata, navicular baltica.

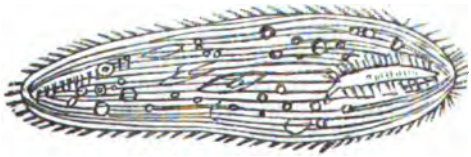
I give here the magnified pictures.

Actinurus Neptunius.

Navicula Baltica.

Monosty la Quadridentata.

Rotifer Vulgaris.



Stylonchia Pustulata.

I did not examine the first sample of water with the microscope. In the water of the second bottle I found but one kind of infusoria, *viz.*, stylonchia pustulata, but they were numerous. In the water sent on Thursday I found the others named, but few in number. In both samples of water there was but a small quantity of mineral matter, a few crystals of Ca CO3. The water was somewhat cloudy and the suspended particles were evidently of vegetable origin. I have not adopted any standard in judging water for drinking purposes.

As yet none has been found having a scientific basis. But let us see how this water would be rated by some of the standards of men who have justly distinguished themselves by their labor in water an-

alysis. The Grenzzahlen limitary numbers are of E. Reichardt, Kubel and Tiemann, and Fischer.

One litre (1,000 cubic centimetres).

	REICHARDT.	KUBEL AND TIEMANN.	FISCHER.
Nitric acid anhyd.	4 milligrammes.	5 to 15 milligramm.	27 milligrammes.
Chlorine	28 "	20 to 30 "	35 "
Lime (Ca. O.)			112 "
Magnesia (Mg. O.)			40 "
Degrees of hardness (German)	18 "	18 to 20 "	17 "

This water contains in milligrammes per litre: Nitric Acid Anhyd., 10.72; Chlorine, 92.18; Lime, 14.8; Magnesia, 41; degrees of hardness (German), 20.596.

The limitary quantity of organic matter in 100 c. c. should not exceed that necessary for the deoxidation of K Mn O4 in 2 c. c. of the 1-100 normal solution. This is given by Fresenius. For 100 c. c. of this water 3.11 c. c. of the 1-100 normal solution was required. The organic matter in the water is considerable, yet is no doubt variable in quantity. On account of the quantity of the organic matter, by exposure to the air doubtless many other species of infusoria would be formed. The water is hard, and by chemical technologists would be condemned, as with them 10 degrees German, or 12.5 degrees English, is the limit.

The ammonia is in a mere trace, yet accurately estimated as given. Nearly all rain-water contains more. I have estimated the chlorine in water sent on Thursday last (by the volumetric method), and found 0.05992 gramme chlorine in one litre. This makes a difference of 0.0322 gramme chlorine as found in one litre of the water of the first bottle sent. In what way could there be such a great increase, or rather decrease of the chlorides? Are there any privy vaults or slaughter-houses near the source of the water? May I ask where this water was obtained?

In a letter of March 12, 1880, Prof. E. T. Cox gives the following: "I fully believe that whenever any form of disease rages as an epidemic in any locality, it is due in a large measure to water pollution. The three streams of subterranean water beneath Indianapolis, flow from northeast to southwest. Wells that are supplied from the upper water contain more and more chloride of sodium (common salt) as you go to the south part of the city, and this is absolute proof of sewer-pollution, and all the well-water from the first and second seams is absolutely dangerous, and its use should be prohibited. The lower stratum is safe if the upper seams are shut off from it. When water works were first contemplated at Indianapolis, I was called upon for information, and had my advice been taken, you would now have the best possible water, instead of water of a doubtful character, to use the mildest term." On the 20th of March a sample of water was obtained from the water works for examination. The analysis showed in one litre,

Total solids	.985	gramme.
Organic and volatile	.08	"
Chlorine	.055	"

Fifty centimetres of the water required fourteen drops of the permanganate of potash solution to render it permanently red. The same amount of distilled water required but eight drops. The microscope, with a lens of 100 diameters, revealed considerable vegetable matter.

Inasmuch as White River is used by the water works as a source of supply when the water in their wells get low, and also in time of fire in the city, it was thought advisable to ascertain the condition of the river water. Therefore, on April 30, 1880, a sample was drawn from the river at middle of the iron bridge at the foot of Washington Street.

One litre contained:

Total solid constituents	.36 gramme.
Organic and volatile matter	.032 "
Chlorine	.105 "
Free ammonia	.00072 "
Albuminoid ammonia	.00048 "

Fifty cubic centimetres of this water required thirty-six drops of the permanganate of potash solution to render it permanently red. The same amount of distilled water required but eight drops of said solution to become permanently red.

The microscope revealed sand, clay, legs and other parts of insects, foreign matter of many kinds, and animalculæ. This water is but little better than sewage. It is due to the water works to state that the water taken from the river is filtered through a bed of sand and gravel about four feet deep.

Professor Edward R. Taylor, of Cleveland, examined two samples of water from the water works with the following result:

	1st sample.	2d sample.
Specific gravity	10019	10021
In grams per litre the analyses show		
Solid residue	.5876	.5696
Organic and volatile matter	.3150	.1213
Chlorine	.0598	.0738
Free ammonia	.0015	.0002
Albuminoid ammonia	.0038	.0018

The amount of chlorine is very considerable in both samples. It would properly be presumed that both had a bad origin.

On May 18, 1880, a sample of water was drawn from a faucet of the Water Works Company. The analysis revealed the following. Each litre contained:

Total solids	.84 gramme.
Organic and volatile matter	.43 "
Chlorine	.047 "
Free ammonia	.00008 "
Albuminoid ammonia	.00024 "
Nitrates and nitrites	Large amount.

The value of the above figures can best be understood when it is known that pure spring water never contains over .000005 gramme of free ammonia, and .00002 gramme albuminoid ammonia per litre. The best authorities state that that water is suspicious which contains above .0001 gramme of albuminoid ammonia per litre; and

over .00015 gramme of albuminoid ammonia per litre ought to condemn absolutely.

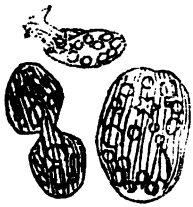
Another sample of water from the water works was sent to Prof. Van Nuys, on May 27, 1880. He reports that the water contained much more organic matter than that in which an estimation of organic matter was made before.

The following statement is from Prof. Van Nuys, July 14, 1880, in regard to water from the water works. *Chemical and microscopic examination of water received from Dr. M. T. Runnels, of Indianapolis, on June 23 and 29, 1880:*

"The organic matter in 100 cubic centimetres of the water required 5.35 cubic centimetres of the one one-hundredth normal potassium permanganate solution. In 5.35 cubic centimetres of this solution there are 1.6932 milligrammes potassium permanganate or 0.428 milligramme oxygen was liberated, hence in one litre of the water the organic matter would require 53.5 cubic centimetres of the one one-hundredth normal permanganate solution, or 4.28 milligrammes oxygen would combine with the carbon and hydrogen of the organic matter.

Residue (one litre filtered) heated to 180° centimetres	473.8
Chlorine	189.3
Nitric acid anhyd ($N_2 O_5$)	17.448
Nitrous acid anhyd ($N_2 O_3$)	a trace.
Ammonia ($N H_3$)	0.38
Calcium oxide ($Ca O$)	128.8
Magnesium oxide ($Mg O$)	46.2
Degree of hardness, English	21.93
Or, degree of hardness, German	17.54

"No microscopic examination was made of the water received June 23d. In that received June 29th, there were numerous flakes of what appeared to be organic bodies with granular matter; the following infusorial animalculæ were found:



Glaucoma scintillans.

Closterium Acerosum.

a Monas crepusculum.
b Monas punctum.

"The residue, organic matter, chlorine, nitric acid anhyd., and ammonia were estimated in the water received June 23d. The calcium and magnesium were estimated in the water received June 29, 1880."

Herewith I give a table of recent sanitary analyses of our city well and cistern waters, which startlingly outline the impending dangers and serve as texts for many cases of ill health and death already met by those who have drank the waters.

The first and second samples were taken from two wells in the rear of a block having about twenty occupants. An inspection of the back yard and alley showed an immense amount of filth. There was no sewer to carry away slop or excrementitious matters. A large privy

vault was in the rear of the block. There was one well north and another south of the vault, and about twenty feet from it. These wells supplied the water to the occupants of the block. Six cases of scarlet fever were there developed and three of them died. The other persons in the block were constantly ailing. One of the leading physicians of the city attributed the outbreak of the fever to the bad surroundings and the impure water.

The third sample was taken from a well on East Walnut Street. The family using the water were more or less sick all the time. Languor, loss of appetite and spirits, sleeplessness or nightmare, morning diarrhœa, headache, and nausea, one or all, continually annoyed those drinking the water. The privy vault, twelve feet deep, was forty feet northeast of the well.

The fourth sample was obtained from a well on North Tennessee Street. Throat affections, fevers, diarrhœas, headaches with malaise, etc., made up the list of the complaints of the family using the water.

The fifth sample came from a well on North Alabama Street. During the last three months, among those who drank the water there were three who had scarlet fever—one of whom died. And so on similar reports can be made of the other samples, except those marked "good" or "excellent."

SANITARY ANALYSIS OF WELL WATERS.

WHERE FROM.	Grams per litre.			Parts pr. million.		Nitrates and Nitrites.	Degree of Hardn.	OPINION.
	Total Solids.	Organ. & Vola.	Chlorine.	Free Amm.	Alb. Amm.			
Susqueh. St....	1.53	.62	.117	.12	.33	much	3	Bad.
Susqueh. St....	.88	.33	.088	.07	.16	much	2½	Bad.
East Waln. St...	1.32	.72	.127	.04	.18	much	1⅝	Bad.
N. Tenn. St.....	.94	.41	.077	.05	.0612	much	2	Suspicious.
N. Alabama St..	1.126	.616	.096	.055	.037	much	3 3-10	Bad.
N. Illinois St....	.60	.18	.043	.01	.24	much	2½	Very bad.
N. Merid. St....	.24	.012	.008	trace	trace	trace	1⅝	Excellent.
N. Alabama.....	.68	.30	.045	.01	.14	little	2	Suspicious.
Hoyt Av.....	.30	.16	.0018	.12	.04	little	1	Good.
N. Penn. St.....	1.41	.03	.075	.24	.4	much	½	Rotten cistern.
Blackford St....	.78	.28	.038	.04	.4	much	1½	Very bad.
N. N. Jersey St..	.798	.178	.104	.05	.39	much	2	Bad.
E. Ohio St.....	1.032	.05	.09	.04	.19	much	4	Bad.

NAME.	Grams per litre.			Parts pr. million.		Nitrates and Nitrites.	Degree of Hardn.	OPINION.
	Total Solids.	Organ. & Vola.	Chlorine.	Free Amm.	Alb. Amm.			
E. Vermont St..	.908	.36	.078	.12	.13	small	6	Very suspicious
Davidson St....	.848	.34	.08	.20	.08	large	6½	Very suspicious
E. St. Joseph St.	.738	.21	.035	.06	.22	large	4.2	Bad.
E. Mich. St.....	1.588	.96	.09	.12	.202	large	5½	Bad.
N. Tenn. St.....	.968	.48	.07	.06	.28	large	3½	Bad.
N. Penn. St.....	.928	.4	.065	.025	.20	large	5	Bad.
New York St.. ..	.5	.13	.01	none	none	none	3⅛	Excellent.
N. East St.....	1.788	.874	.09	.08	.22	large	4	Bad.
Irvington	.697	.29	.04	none	.03	small	3½	Good.
N. Merid. St....	1.06	.57	.10	.08	.164	large	3½	Bad.
N. Delaware St..	.86	.36	.05	.07	.10	large	5	Bad.
N. Tenn. St.....	.44	.14	.007	.01	.00	none	2	Driven good.
Blind Asylum..	.65	.214	.025	.01	.042	heavy / slight	2½	Driven good.
N. East St.....	1.00	.62	.34	.114	.142	large	4	Very bad.
332 N. Miss. St..	.66	.321	.043	.03	.234	large	4⅛	Very bad.

NAME.	GRAMS PER LITRE.			Parts pr. million.		Nitrates and Nitrites.	Degree of Hardn.	OPINION.
	Total Solids.	Organ. & Vola.	Chlorine.	Free Amm.	Alb. Amm.			
Blackford St....	.78	.39	.38	.04	.4	large	6½	Bad.
Peru St.....	.54	.36	.025	.03	.13	small	12	Suspicious.
N. Penn. St....	.65	.38	.03	.08	.10	small	3	Suspicious.
N. Alabama St..	.48	.24	.059	.06	.06	small	7	Good.
N. Delaware St..	.54	.22	.31	.029	.182	large	4	Bad.
School St.....	.994	.414	.10	.04	.16	large	6½	Very bad.
East Ohio St....	1.04	.63	.47	.12	.22	large	7	Abominable.
Mass. Av.....	.89	.39	.213	.07	.13	large	4½	Bad.
E. Ohio.....	.692	.374	.121	.04	.10	large	3½	Bad.
N. N. Jersey....	.78	.29	.08	.03	.13	large	3½	Bad.
E. Pratt.....	.69	.28	.074	.02	.09	large	4	Bad.
E. Maryland....	.99	.47	.111	.07	.199	large	7	Very bad.
Bellefontaine...	.49	.19	.004	.03	.022	small	4	Good.
Christian Av.	.67	.23	.012	.035	.03	large	4	Passably good.
East Vermont..	.59	.19	.12	.03	.09	large	3½	Suspicious.

NAME.	Grams per litre.			Parts pr. million.		Nitrates and Nitrites.	Degree of Hardn.	OPINION.
	Total Solids.	Organ. & Vola.	Chlorine.	Free Amm.	Alb. Amm.			
N. Alabama St..	.832	.56	.059	.70	.12	large	4½	Very suspicious
N. Alabama St..	.79	.39	.055	.64	.10	large	5	Very suspicious
N. N. Jersey St.	.82	.39	.09	.06	.09	med.	5	Suspicious.
N. N. Jersey St.	.91	.40	.055	.08	.12	large	5	Bad.
Alab. & Walnut.	.87	.39	.067	.11	.10	large	4½	Bad.
N. Penn. St.....	1.04	.62	.111	.16	.204	large	7	Very bad.
Oak St.....	.57	.24	.014	.02	.009	small	4	Good.
E. Vermont St..	.66	.29	.04	.05	.07	small	4½	Good.
S. Merid. St....	.89	.385	.07	.07	.09	large	6	Very suspicious
S. Penn. St.....	1.24	.81	.22	.19	.22	large	7	Abominable.
S. Penn. St.....	.87	.33	.072	.095	.088	large	5	Bad.
Virginia Av.....	1.12	.59	.79	.11	.29	large	4½	Very bad.
E. Wash. St.....	.79	.33	.09	.107	.18	large	4½	Bad.
N. West St.....	.83	.42	.07	.067	.093	large	6½	Bad.
E. South St.....	.74	.22	.03	.03	.06	med.	5	Passable.

NAME.	Grams per litre.			Parts pr. million.		Nitrates and Nitrites.	Degree of Hardn.	OPINION.
	Total Solids.	Organ. & Vola.	Chlorine.	Free Amm.	Alb. Amm.			
S. East St.....	.82	.39	.05	.037	.114	large	5	Bad.
E. Market St....	.97	.32	.12	.049	.23	v. large	4½	Very bad.
E. Mich. St.....	1.12	.57	.07	.072	.17	large	4½	Very bad.
Central Av.....	.607	.22	.044	.041	.09	med.	6½	Suspicious.
Laurel St.....	.92	.38	.089	.105	.38	v. large	6½	Very bad.
East Georgia....	.62	.49	.072	.108	.427	large	1½	Very bad.
Broadway St....	.63	.30	.022	.03	.04	small	7	Good
E. New York St.	.59	.21	.094	.07	.07	large	6½	Bad.
N. N. Jersey St.	.63	.24	.07	.08	.069	large	7	Bad.
N. N. Jersey St.	.68	.22	.075	.09	.066	large	6½	Bad.
N. Illinois St....	.80	.31	.03	.039	.113	large	6½	Suspicious.
Hoyt Av.....	.30	.06	.01	.04	.06	small	4	Good.
W. St. Clair St..	.83	.32	.07	.045	.112	large	7	Very suspicious
N. Tenn. St.....	.69	.27	.055	.07	.09	med.	6½	Very suspicious
N. Tenn. St.....	.66	.19	.065	.09	.11	large	6½	Very suspicious
W. North St.....	.74	.30	.04	.09	.12	large	6½	Bad.
E. North St.....	.69	.28	.03	.08	.08	large	6½	Suspicious.
N. Delaware St..	.75	.29	.075	.07	.11	large	7	Bad.

J. N. HURTY, Analyst.

At Indianapolis we have on the Board of Health three earnest and capable physicians who thoroughly understand the present necessities and stand ready to enforce all laws pertaining to public health; but our laws on hygiene are very inefficient, and the power and usefulness of the Board are unwisely limited; therefore the Board can do little towards averting the calamity already upon us. The Board of Health need more money, more men and the largest liberty of action.

We shall never have a healthy city until the Health Department is advanced to the position it deserves. We need a vigorous public sentiment in favor of cleanliness and hygienic measures. The best thought and energies of physicians and scientists everywhere should be directed to questions pertaining to water supply, sewerage and garbage of cities, and if necessary to secure proper legislation, the people must arise in their might and compel timid and short-sighted rulers to give better laws on sanitary matters and more money to make the laws effective.

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House Drainage in Chicago.—Some time ago the executive committee of the Citizens' Association of Chicago appointed a subcommittee to consider the subject of house drainage. After considerable investigation the committee embodied its ideas in a report, of which the following is a brief summary of the recommendations made:

1. Concrete the ground under the entire building.
2. Ventilate the main sewers by a perforated cover on every manhole.
3. Every house to have a cast-iron soil pipe, not less than four inches in diameter, running from sewer to roof, without a trap, accessible for inspection throughout its entire length.
4. Every sink, wash basin, bath tub and water closet (except the "trapless" closets) to be trapped.
5. Every trap to be ventilated from its highest point into a pipe running out above the roof, and disconnected from the soil pipe.
6. Joints in iron pipes to be leaded and caulked to rust joints. Joints between iron and lead pipes to be made with tinned iron or brass ferrules, soldered.
7. Catch-basins to be built outside of the house wherever possible, and ventilated by a special pipe.
8. Water-closets to connect with the outer air by a window or light-shaft, and to have a ventilating flue.
9. Avoid pan closets, and use hopper or improved closets.
10. On the upper floor each water-closet to be flushed from a separate tank through a pipe not less than $1\frac{1}{4}$ inch in diameter.—*Van Nostrand's.*

THE NECESSITY AND MEANS OF REMOVING ORGANIC REFUSE FROM INHABITED PLACES.*

By O. W. WIGHT, M.D., Commissioner of Health, Milwaukee.

Dr. Buchanan, in England, and Dr. Bowditch, in the United States, simultaneously demonstrated that wetness of soil is at least the exciting cause of phthisis. Surface accumulations of water are not only inconvenient and unsightly, but also disagreeable and unhealthy. Sub-soil dampness makes the site of any habitation incompatible with comfort and duration of life. Therefore, the first care in the preparation of the abodes of man, and, it might be added, of domestic animals, should be the drainage of the soil. Removal of water from beneath and around the house and outbuildings, increases warmth, fertility and wholesomeness. What is true in this respect of an isolated habitation, is also true of collections of habitations in the village, and groups of villages constituting the city.

Whatever engineering device is employed for draining the soil and removing rainfall should be used exclusively for the conveyance of water uncontaminated with putrescible organic matter. Such water may then be safely discharged into any convenient natural reservoir, or adjacent stream, where economy and security from flood may dictate. For removing storm water, surface water and sub-soil water from the isolated habitation, neatly-constructed ditches, agricultural tiles properly laid, and occasionally deep drains of porous brick will be sufficient. In villages, well-paved gutters, with more frequent and larger deep drains of porous brick will be needed. In cities, brick mains, adapted in size to the areas from which the water is to be removed, must be added. A suitable size for the site of an isolated habitation, with its out-buildings, in the country, may be regarded as about three hundred feet square. The annual rainfall on that area, at the fair estimate of thirty-six inches, would amount to 270,000 cubic feet. The annual rainfall on a square mile, the average size of a village, would be nearly 84,000,000 cubic feet. On ten square miles, the area of a considerable city, the annual rainfall would be more than 836,000,000 cubic feet. On a city of ten square miles more than 20,000,000 cubic feet of water may be precipitated from the clouds in a single hour. These figures show that the drainage system of inhabited places should be adequate, as well as adapted to the desired end. Details belong, more especially, to the engineer, but he should know exactly what he is required to accomplish; his art only furnishes the means to an end pointed out by sanitary science.

It is an imperative law, which cannot be violated with impunity, that organic wastes of every kind must be removed from inhabited places before the process of putrefaction begins. The excrements of man and the domestic animals, the refuse of manufacturing processes, garbage, offal, wash-water, kitchen-slops, decaying vegetable or ani-

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mal matter, whether liquid or solid, must be carried to some place where the same cannot contaminate the air breathed by man, pollute the water which he drinks, nor infect the food which he eats. As the excreta from the kidneys and intestines of a thousand human beings in a community amount to more than a ton each day, it follows that the annual product of this kind in a city of one hundred thousand inhabitants is about forty thousand tons. The higher the organization of the animal the more poisonous are the excreta in a state of putrefaction. Domestic animals contribute a varying quantity, as a greater or less number of them are required for luxury or industrial use, according to the pursuits and habits of the people in different localities. The waste of kitchens is only second in importance to the excreta of human beings and the domestic animals. Distilleries, breweries, tanneries, slaughter-houses, gas-works, various factories, produce more or less liquid or solid organic matter in different cities. The putrescible matter of street-sweepings really belongs to the catagory of animal excreta.

Now, it is very evident that all solid organic refuse, such as garbage, offal and manure, must be removed by cartage. No system of water-carriage can be devised which will answer the purpose. Portions of garbage, offal, etc., if properly managed, may be economically fed to ducks, geese, chickens, fishes or swine. The rest must be returned to the land for fertilization, except in places like New Orleans, where there is no land and a great river may safely receive all that is given to it. Where there is neither land nor mighty stream, a perpetual fire must swiftly do the sanitary work of oxidation. Here, again, details must be left to the engineer, supplemented by the practical economist; only, the engineer and the economist must not at all interfere with sanitary ends. The most difficult problem of all is to get safely rid of liquid organic refuse, that is, of water containing putrescible matter in solution or suspension. Engineers who are quacks in sanitation, and sanitarians who are quacks in engineering, have practiced running it into the drainage systems of inhabited places. In fact, this has been the plan generally adopted, till quite recently, Col. Waring, who is both engineer and sanitarian, has been bold enough and enlightened enough to put in practice a plan that was previously little more than a timidly advocated theory. To the great detriment and cost of the public, the sewerage systems adopted in towns are determined by men who are profoundly ignorant of both sanitation and engineering.

The prevalent practice of removing sewage by means of the water drainage system of inhabited places is open to many and very serious objections.

1. Ditches, gutters, tiles and porous brick conduits for removing surface and sub-soil water are comparatively cheap. It adds immensely to the cost to transform water drains into sewers, so as to make them at all fit to convey liquid wastes. The combined expense of a separate drainage system and an independent sewer system is much less than the expense of a single system that cannot be so constructed as to perform well the double service of removing water from the soil and liquid refuse from habitations.

2. In most places it is not difficult to find a proper outfall for the

water of a drainage system. As soon as sewage is mixed with the flow of drains the whole mass is contaminated, and the trouble and cost of securing a safe outfall are, as a rule, greatly increased. The necessity of pumping vast quantities of rain-water and sub-soil water, mingled with the liquid refuse of houses and factories in the same system in the new sewerage-works of Berlin and Dantzig increases the running expense to an extent threatening failure.

3. The sewage proper of a city is nearly a constant quantity. It is approximately measured by the amount of water daily used in houses and factories. Consequently, the engineer, in constructing a system for the removal of sewage proper, can adapt it to a constant flow and make it self-cleansing. On the contrary, rainfall is an immensely variable quantity. A drainage system for its removal must be of maximum size. When sewage, therefore, is turned into the drainage system, a slow flow will be inevitable much of the time, resulting in putrefaction and the generation of sewer-gas, the presence of which within the area of inhabited places dangerously violates the most vital law of sanitation.

4. In the drainage system all conduits are purposely made to let water in. The object is to convey water away from the soil. But a porous drain will strain sewage through into the earth, and gradually pollute it. Consequently, a conduit for the conveyance of sewage must be made tight. Hence the absolute incompatibility of the two ends sought in the same structure. A good sewer is a bad drain. A good drain is a dangerous sewer. Attempts are constantly renewed to attain the double quality of perviousness from without and imperviousness from within, with unceasing and inevitable failure. Sanitarians who are quacks in engineering have tried it in vain. Engineers who are quacks in sanitation have tried it equally in vain. Quacks in both engineering and sanitation, always well represented in boards of public works, obstinately keep up their search for the unattainable, like the seekers of the philosopher's stone and the inventors of perpetual motion.

5. Water stored in cisterns is almost invariably poisoned by the way of overflow pipes which discharge into the sewer system of inhabited places and return the dangerous gas. And the drain-pipes from cellars and basements generally furnish avenues through which this invisible foe of human life in cities finds easy ingress to habitations. A separate drainage system affords an easy means of guarding against peril from such a source. Sanitary inspectors are often astounded by finding a tube from an ice-box, in which choice and delicate food, like meats and milk, is kept, running directly into a sewer pipe. The combined sanitary and engineering quack will tell you, with pitiful ignorance, that the deadly sewer-gas is kept out by means of a little water-trap through which a baby could blow with a straw. A separate system, used exclusively for sewage, is the only certain safety against such danger.

6. With the clumsy, costly, perilous, combined system in general use for removing water and sewage together, the earth of towns gradually becomes infected with organic matter in a state of putrescence. Hence the water of springs and wells at length becomes polluted and unfit for use. With a separate, properly constructed and properly

managed system of impervious pipes for the removal of all sewage, and with other sound regulations for the care and removal of solid organic refuse, there is no reason why the spring-water and well-water of towns should not remain clean and wholesome. Besides, when the earth of inhabited places is kept so clean as to preserve the purity of the water, no exhalations will arise from it deleterious to health and dangerous to life

GOOD SEWERAGE AND DRAINAGE.

This is not the place to describe in detail the separate sewer system for the removal of liquid organic wastes from inhabited places. The engineer must conform to the requirements of sanitary science. Any system will be faulty which allows sewage to putrefy at all, either in its source, on its journey from human abodes, or in its outfall. The plumber must use only good material, his workmanship must be skillful, and he must adapt his art to the ends of sanitation. All soil-pipes must be of iron, lead-jointed, and not only impervious to water, but also to gas. Soil-pipes should be carried up through the roof, with undiminished calibre, and be open at the end. Foot-ventilation never should be omitted. Traps should be as near perfect as known mechanical contrivances can make them. No pains should be spared to ventilate all waste pipes. Proprietor, architect, and plumber should be held conjointly responsible for sewer-gas in or around any habitation. Common sewer-pipes in the public streets should be impervious to both water and gas. Engineers and contractors, as well as the authorities ordering public works, should be held responsible for the quality of the material used and for the skill and honesty of construction. Too much pains cannot be taken to make the sewer system of a town as near faultless as possible. The outfall is a matter of great moment; it may be, exceptionally, into a great river, as at Detroit or Memphis. Generally it will be best to return sewage to the land for disinfection and fertilization. Whether surface irrigation, or intermittent downward filtration, or a combination of these methods, will be best in a given instance, must be determined by sound engineering and sanitary judgment.

The great principle to be kept in view is the removal of sewage (not sewage diluted with vast quantities of surface and subsoil water) without pollution of the soil, without putrefaction, and consequently without generation of sewer-gas on the journey.

The entire excreta of human beings may be admitted to the sewerage system for water-carriage. The privy vault should not be tolerated in any civilized neighborhood. Where there is no sewer system some form of earth closet ought to be used, and the contents frequently removed. The liquid portion of the excreta of horses and other domestic animals should be constantly removed by the sewer system. The solid portion should not be thrown upon the ground and bleached by rain, but be kept under cover, dry, and frequently carted away. In fact, no organic matter should be thrown on the ground, nor deposited in the ground near human habitations. The soil where man dwells is sacred, and it is sanitary sacrilege to pollute it. He who fouls the air that he breathes himself, or the water that he drinks, or the food that he eats, is a barbarian who might learn

wisdom from the cat or decency from any swine not demoralized by contact with man. He who fouls the air that another must breathe, or the water that another must drink, or the food that another must eat, is a criminal, to be classed with those who maim and kill.

There are more reasons for such care in the removal of organic wastes from inhabited places than appear on the surface. The chemistry and hygiene of putrefaction are complex, involving many practical considerations. Wherever there is a collection of putrefying organic matter, whether on the ground, in the ground, within a faulty sewer, or under a habitation, there is a tireless foe to health and life. Not only are putrescent collections of garbage, decaying vegetables, manure, offal, and human excreta harmful in themselves by reason of exhalations poisoning the air and leeching liquids polluting the earth; they are also depositories and multipliers of disease germs. Such collections may not produce infectious diseases *de novo*, but they lessen the vitality of people living in the neighborhood, and thereby lessen the power of resisting epidemics. It is a well-known pathological fact that nature struggles to eliminate disease by excretory processes. Accumulations of filth containing excreta may therefore harbor seeds of various communicable maladies. Sewer-gas, while it may not beget scarlatina, diphtheria, small-pox, and other contagious diseases, easily becomes the vehicle of conveying them, through obscure and intricate channels. Nor is this all. It is well known that a dung-heap will take cholera, hold it for an indefinite period, and convey it to human beings; that is, cholera dejecta thrown upon a dung-heap will plant in it the germs of the disease, there to take root and multiply, and may communicate themselves to man under favoring circumstances. A privy vault will take typhoid fever, have it badly for a long time, and communicate the disease to human beings. It is probable that a heap of putrescent garbage may catch diphtheria in the same way, multiply its germs and communicate them to unsuspecting children. There is little doubt that every seething mass of organic matter is affected with yellow fever in the midst of an epidemic of that disease. It is believed by many experienced physicians that yellow fever is not communicated from person to person, but is always caught from surrounding objects.

So great is the influence of filth in these various ways that no epidemic can make any serious headway in the midst of cleanliness. One frequented privy vault, down with typhoid fever, is more dangerous than a house full of human patients. A big trunk full of dirty clothes, sick with yellow fever, is more to be shunned than a small hospital full of human victims of the disease. A village dung-hill, planted with cholera, is more perilous than a dozen cholera corpses. A foul sewer, swarming with scarlatina germs, may be more dangerous to a neighborhood than an infected school-house.

It has been objected, in relation to separate systems for drainage and the removal of sewage, that droppings of horses and other animals in the streets, steeping in the rainfall, will be a source of pollution to surface water, rendering it putrescible, and consequently capable of generating sewer-gas. The simple and effective remedy is cleaning the streets frequently and well. Most cities would thereby be greatly improved, both in appearance and salubrity.

It has also been objected, that in quarters where the vitrified pipe sewer system for the removal of sewage does not extend, there the inhabitants must throw the liquid wastes of household life upon the ground. No such necessity exists. Even an isolated habitation in the country should have its sewer pipes, and entirely separate from the drainage system, to convey kitchen slops, wash water, and other dangerous liquids to a place of safety. The reason why typhoid fever, diphtheria, and some other filth diseases are so prevalent in country districts is that privy vaults so frequently seep into wells, and animal excreta of pig-pens and stables are left to poison the earth and the air. The ground about kitchens, super-saturated with slops, very often becomes putrescent in the summer warmth, breeding disease which superstitious ignorance attributes to Heaven. A householder may dispense with his parlor and its ornaments, if necessary, but he cannot afford to invite upon himself and family disease and death, by neglecting to provide the means of keeping the site of his habitation dry and clean. *Laborare est orare*,—"to labor is to pray,"—said the wise old monk, and the most effective prayer for health is to supply every needed hygienic device for the sacred home of the family.

It is further objected that most of our cities are already sewered for the double purpose of removing storm-water and sewage through the same conduits, and that we cannot afford to do the costly work over again. It is one of the fates of progress that faulty methods must be followed by reconstruction. No works last forever; and when we build anew we can do it better. In the meantime the faulty old sewers, with their dangerous debouchement into the nearest streams, lakes, or ocean harbors, can be washed out, disinfected, and used exclusively for water-drainage, while a supplementary system, with safe outfall for the removal of sewage alone, is constructed with proper engineering skill under the direction of sanitary science. The cost of such a supplementary system is not more than one-tenth of that of the prevailing system.

Many obstacles lie in the way, which must be overcome by effort and conflict. In the first place, civil engineers must be taught enough sanitary science to make them understand the limitations of their own sanitary ignorance. Otherwise, they will continue to use their large influence with town authorities to persist in making costly fine sewers that are not and cannot be adapted to the incompatible double purpose of removing storm-water and sewage; just as architects persevere in constructing monumental hospitals in defiance of medical, surgical, and hygienic requirements.

In the next place, the inertia of popular ignorance and apathy, and the conservative resistance of innovation, must be met and conquered. At the outset, the sanitary teacher and preacher is the sole reliance. His services can never be dispensed with. Especial treatises, the proceedings of sanitary associations, and, above all, the constant reiteration of hygienic facts in the periodic press, are rapidly creating a public opinion which will be irresistible. The family doctor is already looking for the causes of diseases in the sanitary surroundings of habitations. The servant of Christ, like the good Bishop Ireland, begins to instruct his flock to observe cleanliness, as well as to pray, in order to avert the wrath of God in epidemics.

Finally, a public sanitary conscience must be created by the enactment and enforcement of wise sanitary laws. "I have given it as my deliberate opinion," says Alexander Baine, "that authority or punishment is the commencement of that state of mind recognized under the various names of conscience, the moral sense, the sentiment of obligation. The major part of every community adopt certain rules of conduct necessary for the common preservation of, or ministering to, the common well-being. They find it not merely their interest, but the very condition of their existence, to observe a certain number of maxims of self-restraint and of respect to one another's feelings on such points as person, property, and good name. Obedience must be spontaneous on the part of the larger number, or on those whose influence preponderates in the society; as regards the rest, compulsion must be brought to bear."

It is not proposed that "those whose influence preponderates" shall constrain the rest to adopt a particular sewerage system, but that they shall compel, by wise and regular administration, the general observance of sanitary laws for the common good. "Compulsion must be brought to bear" to secure respect for health and life, as well as for property and good name. The recent experience of England and of certain cities in the United States clearly demonstrates that enlightened public opinion fully sustains the judicial enforcement of sanitary codes.

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Practical Sanitation in Milwaukee.—Milwaukee, Wis., May 9, 1881.—Small-pox was brought here from Chicago six weeks ago. The house where it was discovered was absolutely quarantined. The disease spread no further; has been effectually stamped out, and Milwaukee is again free from small-pox.

O. W. Wight, M.D., *Commissioner of Health.*

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Prevention of Malarial Poison.—Hugo von Koppenfel, in a deeply interesting letter giving an account of his progress in exploring the Gaboon country, published in the June number of the *American Naturalist*, gives the following description of the malarial dangers of the low lands, and the means he used for protection:

"With the exception of a few higher points where forest trees grow, the vegetation of this swampy lowland consists mostly of thickets of mangrove, from whence comes, under the stimulus of the tropical sun, the *aria cativa* (malaria), so fatal to Europeans. It is extremely dangerous to travel through the districts where the air is impregnated with poisonous exhalations, and efficient prophylactic measures must be taken if one would escape. It has been my custom to take for this purpose one or two doses daily of quinine, and to wear a respirator of fine wire gauze over my mouth. In the evening I bathe the entire body with salicylic acid mixed with a few drops of spirits of ammonia and of glycerine.

CELLARS.*

By A. N. Bell, A.M., M.D.

The singular inaccuracy of the published minutes of the discussion which followed the paper on *Unsanitary Engineering and Architecture*, which I was privileged to read before this section last year,† has suggested to me the propriety of the few remarks I now submit, on *Cellars*, as a substantial means of correction. Moreover, in considering the subject, it is not deemed necessary to limit attention to the strictly technical significance of the word cellar—to rooms under dwelling-houses or other buildings commonly used as repositories for provisions and other stores—but to comprehend as well ground floors, building ground, cesspools and privy vaults.

Cleanliness, dryness, light, and ventilation are the cardinal doctrines of healthful human habitations everywhere; but with these conditions cellars and ground floors, as ordinarily constructed or prepared, are in deadly conflict. It is an accepted fact that soil-moisture—even from clean soil—is a prolific source of disease. Notwithstanding, it is the common practice to build houses utterly regardless of this fatal condition. Not only is culpable ignorance or carelessness common in the selection of building sites in these respects, but good sites are frequently spoiled in their use. Whether of sand or clay, alluvial or primary soil; whether there be little or much of subsoil moisture and gases of decay, and whether these dangers are superficial or deep-seated, stagnant or in motion, are questions of great importance to occupants, but, evidently, rarely entertained by owners, architects or builders. At least, building sites and foundations, instead of being thoroughly cleansed, drained, and fortified with damp-proof coverings and courses—essential preliminary processes for the protection of health—are graded, excavated and built upon without regard to natural conditions and previous history, or to dangerous local conditions, mediate or immediate. And for economy's sake, or, possibly, sometimes in veneration of ancestral preferences, sites which have been previously occupied—old cellars which have been soaked with family stores for a half century or more—and even the brick and stone from the old structures are worked into new as preferred material, utterly regardless of the dangers involved.

Again, in the progress of American cities, especially the *new* building ground of the outskirts, or swamps recently filled with ashes, dead cats, and turnip tops, finished off with a light top dressing, are the favorite sites of real estate speculators; and the prevalent sickness common to the occupants of houses in such new and airy situations is often cited in comparison with that which prevails, perhaps less extensively, in more crowded, and apparently more filthy neighborhoods.

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† See The Sanitarian, Vol. VIII. p. 304.

Moreover, houses built by real estate speculators, or on investment, thus situated, are, of all others, those which are most rapidly constructed and quickly tenanted. Finished in April, and frequently occupied on the first day of the next succeeding month, they are found to be "delightfully cool and pleasant" for the summer months. But following the fashion, the residents of these new and "improved" sections commonly close their dwellings in the latter part of the summer, and betake themselves to the country. They return in October to dampness and mould, with which they content themselves for a time, in the prospect of dissipating the moisture when the fires are lighted. Icy December comes in, the radiators are heated to the utmost, but every morning the windows are reeking with a sweating sickness; the moisture and gases from the damp walls and from the foul soil for several rods around find herein the most inviting and facile means of escape, and diphtheria is observed to be no respecter of neighborhood or domicile; it is equally prone to prevail in new neighborhoods and old; in airy situations and crowded tenements. And what are the common variations of this illustration?

In New York the dwelling houses and business places are commonly built with no pretense to protection from the emanations of a filthy soil. There is an amount of surface pollution beyond calculation; there are innumerable old and leaky sewers and elongated cesspools poisoning the subsoil in all directions; school buildings, palatial hotels, flats and other tenement houses crowded to a degree unequaled anywhere else in the world. In Philadelphia there is less surface filth and more house-room, but with the same disregard of soil emanations; there are thousands of privy wells and cesspools scattered all over the city, and many of them built never to be cleansed, with a capacity of from one thousand to two thousand cubic feet, and sewerage no better than that of New York, Brooklyn, Baltimore, New Orleans—and a dozen other cities might be named—with various conditions, but constant sources of soil-poisoning, and epidemics of filth diseases of one kind or another all the year round, and yet not one house in a thousand protected against the emanations of a filthy soil through and by means of the cellar! A correspondent of the Massachusetts State Board of Health a few years ago gave a sketch of a cellar built by a clergyman. It was provided with an open well and sink drain with its deposit-box in close proximity thereto, affording facility to discharge its gases into the well as the most convenient place. The cellar was used as country cellars commonly are—for the storage of provisions of every kind—and the windows were rarely or never opened. The only escape for the soil moisture and ground air, except that which was absorbed by the drinking water, was through the crevices of the floor into the rooms above. "After a few months' residence in the house, the clergyman's wife died of fever. He soon married again, and the second wife also died of fever within a year from the time of marriage. His children were sick. He occupied the house about two years, and was succeeded by a man named B. His wife was soon taken ill, and barely escaped with her life. A physician then took the house. He married, and his wife soon after died of fever. Another physician took the house, and within a few months came near dying of erysipelas." The house

meanwhile received no treatment; the doctors, according to their usual wont, even in their own families, were satisfied to deal with the consequences, and leave the causes to do their worst. Next, after the doctors, a school teacher took the house, and made a few changes, "for convenience" apparently, for substantially it remained the same, for he, too, escaped as by the skin of his teeth. Finally, after the foreclosure of many lives, "the sickness and fatality of the property were so marked that it became unsaleable. When last sold, every sort of prediction was made as to the risk of occupancy, but by a thorough attention to sanitary conditions, no such risks have been encountered." It would be easy to match this case by several which have fallen under our own observation. As mere mention, one we recall on Brooklyn Heights, notorious for its unhealthfulness, *was built over an old privy vault.* In another, in a different part of the city, a clergyman and four children were killed by the cellar emanations—the nature of which was not made public. Many dwelling houses we know of in both New York and Brooklyn, and some palatial hotels, built in the midst of garbage-filled lots, and the leprosy which cleaved unto Gehazi, for his too great haste to get rich, was not more pertinacious than that which is fastened to these habitations, erected under the same propensity which governed him; and the diseases which follow, though perhaps less loathsome than leprosy, are scarcely less deadly.

Of all the diseases which afflict people who live in houses, consumption is probably the most universally prevalent and fatal—killing in the United States alone about 100,000 people annually. What are the causes most promotive of consumption? Soil moisture, the gases of decay, deficient light, and deficient ventilation. Acute diseases of the lungs kill about as many as consumption, and these are always the most prevalent and most fatal where the conditions promotive of consumption are most abundant.

Of diphtheria, typhoid fever, diarrhœal diseases—in short, the whole category of diseases commonly classed as zymotic, comprehending about one-fourth of all who die—the same conditions apply, with singular potency. Notwithstanding, of the whole six or seven millions of dwelling houses occupied by the people of the United States, it is safe to say, not an average of one in ten thousand is fortified against a filthy soil. What is the remedy? *Cleanliness, dryness, light* and *ventilation.* Apply these conditions to the habitations of the people, and half, at least, of the diseases which now afflict the people, and half the deaths, would be the reward. But how? According to the minutes of this section last year, as published in the *Transactions* (Vol. 31, pp. 413–'14), "Dr. Bell closed the discussion" referred to at the beginning of this paper, "by describing the manner in which cellars should be made. He advocates the use of coal-tar and creosote (!) applied to the floors in layers, and sprinkling sand over this," etc. The errors consist in naming "creosote" instead of *asphalt,* and the wholly unintelligible description of the manner of using the substances named. The description given was of an impervious cellar, so made by a lining of felt saturated with a mixture of coal-tar and asphalt, as follows:

The side walls and floor being made as smooth and dry as possi-

ble, if with brick or cement, so much the better, are first thoroughly covered with the mixture of coal-tar and asphalt, laid on boiling hot. Next, over this, after cooling, follow layers of felt, three being usually sufficient, laid shingle fashion, that is, with deep, overlapping margins, and each layer thoroughly covered with the boiling-hot mixture. To do the work properly, three persons at least should be employed: one at each end of the strips of felt severally, to hold up the edge, and the third to lay on the coal-tar and asphalt mixture with a broom. The three layers aggregate a thickness of about an inch. If mixed in proper proportions—and this requires skill—about two parts of coal-tar to one of asphalt, the sheathing thus prepared is somewhat pliable, but not at all sticky, will not crack or flake, and is completely impervious to both moisture and gases. The sides may be sealed over or painted, and the floor covered over with a thin coating of cement, tiling or brick, according to fancy.

Such, in substance at least, should have been the record in the minutes of last year.

The process above described refers to repairs—to rendering cellars to houses already built impervious. If proceeded with at the outset —at the very beginning of the domicile—as every cellar or foundation should be, the operation would be different; especially for the side walls, which should be treated from the outside; indeed, this is preferable in any case, but the plan suggested is with a view to convenience and economy. Moreover, the same material may be used in a variety of ways; one, and a very good one, is for brick or cement walls, floors, yards and walks, where the pressure of soil moisture and gases of decay is but slight, to thoroughly coat the surface two or three times over with the boiling hot mixture. It will penetrate and fill the pores of such material to the depth of about half an inch. As a lining for privy vaults and cesspools, an excellent plan is to lay the inside course in boiling hot coal tar and asphalt instead of mortar; dip every brick in the mixture and lay with tongs.

In the construction of cellars, to country houses especially, there should always be an open area to the full depth of, or extending entirely round the cellar; and the same in city houses whenever practicable. When this is impracticable the side walls should be hollow and ventilated. Side walls of good material, thus constructed, are commonly dry without other treatment, leaving the floor only to be made damp-proof in the manner already described, or otherwise. And here it may be remarked, of damp-proof coverings there are several kinds. There is one, so called, of asphalt sheets ready prepared for laying on the walls or floors. But this alone is short-lived and insufficient. Enameled or glazed bricks, vitrified stone-ware tile, slate, sheet-lead, and other material more costly, and more liable to displacement and breakage than the coal tar and asphalt sheathing, have been used more or less; but, all things considered, the coal-tar and asphalt are preferable for both construction and repair.

For houses built without cellars—usually over damp or water-logged soil—it seems hardly necessary to state, the sites should be carefully drained, and the under-pinning open to such a degree as to allow the air a clean sweep under the floor. The necessity of light and ventilation of cellars is apparent without discussion. But no

consideration of cellars would be complete without a few words, at least, on the importance of cleanliness—so much neglected by even tidy housekeepers, as compared with other parts of the house. In the northern section of our country, and in city houses especially, the furnace or other heating apparatus, with its fresh-air shaft appurtenances, is commonly placed in the cellar. The air-shaft or box is usually carried across the ceiling from a side window, or from the window down the side of the wall and under the floor into the furnace chamber; in either case it is fitted with a regulating slide or door to admit more or less, or to wholly exclude, fresh air from the outside, depending upon the temperature or direction of the wind; so fitted, in short, as to be constantly subject to the admission of some air from the cellar, and, at times, to take therefrom its whole supply. And here are stored, besides the fuel and ashes, the family provisions of every kind, stale and fresh, the ice-box, and not infrequently cooking utensils; and to crown all—a common appendage—the servants' water-closet! And to all this collective source of impurity is added the emanations of a foul soil. Surely it is no wonder that, under such circumstances, hot-air furnaces, with their surroundings, are unhealthy; that cellars, as commonly constructed and used, are recognized by writers on horticulture as being especially adapted to and recommended for mushroom culture; a class of vegetation significant of uncleanliness, dampness, darkness, stagnation and death.

Newport's Filthy Soil.—One of our ablest and most respected citizens presented his petition to the City Council for a sewer in Mill Street, and gave as a reason that since the introduction of city water the soil in his vicinity had become saturated with the refuse so that the situation is becoming dangerous. As this statement was not made in the interest of "science," at which some of our officials affect to sneer, it may have weight with the authorities. Nothing is plainer than that if Mr. Norman turns Easton's pond over on to us, passing the water through our houses, water-closets and cesspools, to be then absorbed and gotten rid of by evaporation, the condition described by the petitioner is not only true, but the ground is saturated with foul water which must give off dangerous exhalation. The peril arising from this cause will steadily increase as the process goes on from week to week and year to year. This process is particularly dangerous for those who continue to use well water. No matter how good a well may have been for a hundred years, nor how good it may be now, it cannot maintain its purity when it is made, as it certainly must be, the receptacle of this filthy drainage. Newport should hurry up and agree upon a system of sewerage. If our city fathers require much longer time in which to come to conclusions, the public will be led to think they are slow reasoners.—*Newport News.*

THE CONTAGIOUS DISEASES ACTS OF GREAT BRITAIN.

ABSTRACT OF THE EVIDENCE BEFORE THE SELECT COMMITTEE OF THE HOUSE OF COMMONS ON THE CONTAGIOUS DISEASES (WOMEN) ACTS.

Prepared by J. Birbeck Nevins, M.D., London; one of the witnesses before the Select Committee; President of the National Medical Association for the Repeal of the Contagious Diseases Acts.*

EVIDENCE OF INSPECTOR-GENERAL LAWSON IN FAVOR OF THE ACTS.

Mr. Lawson is one of the most, if not the most, important witness yet called in favor of the Acts, both from his official position and the nature and extent of his evidence. He was for thirty-two years a surgeon in the army, and for five years he was Inspector-General of Army Hospitals, from which post he retired in 1872. Great importance was evidently attached to his evidence, both by the advocates and the opponents of the Acts, and it extended over nearly the whole of two days. It is difficult to analyze it perfectly, owing to its great extent, but we believe that the following account embraces nearly every topic of real importance.

Note.—The figures in brackets refer to the number of the Questions and Answers in the evidence, as published by the Select Committee. The portion in Italics is Mr. Lawson's own words, or the substance of them. The portion in Roman letters is explanatory matter, not actually in his evidence:

There was a continuous and unbroken fall of 52 per 1,000 in primary venereal sores in the whole army, previous to legislation, *i. e.*, from 131 per 1,000 in 1860 to 79 per 1,000 in 1866, the year when the principal Act was passed. *This fall was, therefore, independent of the legislation of the Acts* (637-847). *During this period numerous agencies were in operation, of a moral and sanitary character, calculated to reduce disease and improve the morale of the army, and they still continue in operation* (638 *to* 641). *I acknowledge that this fall was due to causes wholly independent of the C. D. Acts* (847), *but I maintain* (462-643) *that the fall was merely one of those fluctuations that we find in all diseases, and I entirely decline to accept the lower figure as the starting point from which to judge of the operation of the Acts* (660). *The continuity of the fall for six years, under the circumstances acknowledged to be in operation, is to be disregarded, and the mean of the whole period must be taken. This must then be compared with the mean of the next six years after the Acts were in force: and the difference between the two means shows the amount of the beneficial effect from the Acts* (442-654-975). It is true that the fall was continuous and unbroken for six years, but still *I maintain that it was merely a fluctuation, for it was not regular* (657-658-659), *and it merely* "HAPPENED" (659) *that the ratio was high in* 1860, *the first year recorded; and it* "HAPPENED" *that the ratio was low in* 1866, *the year in which the Act was passed* (659-678). In accordance with all experience of disease *it was to be expected that the fall would take a turn sooner or later, for syphilis is like all other dis-*

* Continued from p. 222.

eases and comes in epidemics like small-pox or measles (446 *to* 448, 876, 1212), *for which we cannot account.*

If, therefore, it had not been for some new agent at work (653) *the fluctuation would have continued with little diminution of disease, notwithstanding the continued operation of the moral and sanitary causes previously acknowledged as calculated to produce amendment* (1168-1169). *This new agent was the C. D. Act passed towards the end of* 1866 (847). *This new force checked the rise which I assume would otherwise have taken place* (643-847-1174), *and disease lessened in the stations under the Act, while it went on fluctuating upon a higher ratio in the stations not under the Act* (1174).

In 1866 the principal portion of the army was divided by the Act into two classes. About fifty thousand men stationed in 14 places in England and Ireland were put into one class, and about twenty thousand men stationed in 14 other places in England and Ireland were put into another class. While a variable number distributed throughout the kingdom, and amounting to twenty-one thousand men, were left out of consideration altogether until 1873, when they found a place in the Army Report (Army Report, 1873, p. 1 , at foot). To the largest of these classes the Act of 1866 was applied sooner or later, while it was never applied to the places in which the smaller class was stationed.

The 28 places selected have not the slightest resemblance to each other independently of the C. D. Acts, for London is in one of the sets of places, and Shorncliffe is in the other, and *I should never think of comparing London with Shorncliffe* (871). *But although they cannot be compared when they are by themselves, yet if other equally incongruous places* (for example Manchester and Maidstone, Aldershot and Preston) *are mixed up with them, then they become groups of places which, I maintain, may be compared with scientific propriety* (871, 872, 875, 940, 942),—"*you must recollect the Table embraces* 14 *stations which have naturally* A VERY DIFFERENT PREVALENCE OF DISEASE AMONG THEM. TO GET A PROPER COMPARISON *we require to know* WHAT STATIONS *they were, and to have their sick list for a number of previous years*" (679). *The circumstances of these two groups do not resemble each other* (422, 423, 1215), for the largest is under strict military rule and consists of large garrisons, while the other consists of small garrisons in the midst of large civil populations, *but for all that* "I ASSUME" (711, 499) *that the group of large garrisons will exhibit accurately the sanitary influence of the Act, and* "I ASSUME" *that the* (711, 426, 461, 498, 499) *soldiers in the group not under the Act will exhibit the natural course of venereal disease among the community, such as it would have been in amount, not only among the soldiers in the small garrisons in large civil populations, but also among the soldiers in the large garrisons under strict military rule.*

Mr. Lawson, therefore, placed before the Select Committee the amount of primary venereal sores in the large garrisons (50 per 1,000 in 1873) as a substantially accurate measure of the influence of the operation of the C. D. Acts, and its amount in the small garrisons (102 per 1,000 in 1873) as a proof of the injury sustained from the absence of the Acts. And he desired the Committee to draw the inference that it is the C. D. Acts, and these Acts only, which have produced the difference in the amount of disease between these two sets

of incongruous and otherwise non-comparable stations (499, and evidence throughout).

The application of the C. D. Acts is a "GREAT EXPERIMENT" (611, 887), *and it is important that every precaution should be taken that nothing may interfere with its success* (507, 887). *Accordingly extraordinary steps have been adopted,* quite independently of the Acts, and forming no part of their provisions, *in order to prevent to the utmost the propagation of disease by the soldiers among the prostitutes in the places under the Acts* (612 *to* 615), *while no precaution whatever is taken to prevent the spread of venereal disease by the soldiers in the places not under them* (616, 621, 886 *to* 892). If the question is asked *why these extraordinary precautions are taken in one set of places, I reply that it is to ensure the success of this* "GREAT EXPERIMENT" (887), *and if asked why similar precautions are not taken to limit disease in places not under the Acts, I merely reply: "Simply they are not; that is all I have to say"* (888).

The omission of these precautions is not in the interest of the public health (888) *nor even of the health of the soldiers, but it is most important that this experiment should be made to succeed* (887). These extraordinary precautions form no part of the Acts, but Mr. Lawson has, throughout his evidence, tacitly ascribed to the credit of the Acts any beneficial results they may have produced (557).

In estimating the saving of efficiency in the Army, for which I have given credit to the Acts, I do not take the actual saving that the Army Statistics show, but I calculate an amount which I ASSUME *would have been obtained if only the Acts had been applied universally* (711, 714, 715, 718, 721, 1076 to 1114).

Mr. Lawson placed before the Committee the following propositions, in substance, though not in the form here given to them:

"That the difference in the amount of primary venereal sores, between the two sets of stations (regardless altogether of the third), is a true, scientific and substantially accurate measure of the sanitary effects of the C. D. Acts, incongruous as the places may be which constitute each set, differing from each other in essential respects as the two sets may do after they have been constituted, and specially protected, as one set may be by precautions having no countenance in the Acts, which precautions are disregarded in the other set.

"The ratio of primary venereal sores *is* 44 *per* 1,000 *in the set of stations under them, on the average of the last nine years, while it is* 101 *per* 1,000 *in the selected set of fourteen stations not under them; and this difference of fifty-seven per* 1,000 *in favor of the subjected set of stations I maintain to be the pure and simple effect of the C. D. Acts;*" notwithstanding the absence of disease recorded in the 100 other stations not under their influence, and regardless of the other differences mentioned above and in the following paragraph.

At the date of 1870, when periodical examinations of the women first became universal in the subjected stations, and before these stations had had time to derive the assumed benefit from them, the *ratio constantly sick in the subjected stations was barely one-half that of the unsubjected stations.* Yet both sets were at that date practically alike in being without the essential of the C. D. Acts, viz., the periodical examinations of women. This remarkable difference indicates some

important differences between the two sets of stations—the subjected and the unsubjected—quite independent of the periodical examinations of the women, and shows that the difference in the amount of disease must be looked for in other circumstances than simply the presence or absence of the Acts. This important point is borne out by the evidence of Inspector-General Lawson (408–412–415–422–423).

(422.) "May I take it, that before any Acts were passed the state of disease in the stations now governed by the Acts, and the state of disease in the stations outside the Acts exhibit no appreciable difference?" "*There was a difference.*" (423.) "Further than that, *there was a difference in the aggregate of the stations, because there is a good deal in the stations. There is something in the character of the stations which defines the amount of disease in them:* at least we find a particular form of disease associated with certain stations to some extent."

Yet, in spite of this, Mr. Lawson tried to impress upon the Committee, throughout his evidence, that it was the Acts and the Acts alone which have produced the difference in ratio in primary venereal sores at the present time between the stations under the Acts and those not under them. His evidence must be read *in extenso* in order to appreciate fully how entirely this was its object.

Mr. Lawson maintains that the C. D. Acts have reduced secondary syphilis, as well as primary venereal sores; but the whole basis upon which his assertion rests, is his theory that the large fall in secondary syphilis between 1859 and 1866 was merely an accident, a fluctuation; and that there was no reason to suppose that the fall would have continued unless the C. D. Acts had been passed.

His position is, that the *average* of the years preceding 1866 was 32.67 per 1,000; the *average* of the next six years under the partial application of the Acts was 25.97; and the *average* of the last six years under their complete operation was 25.63, being less on the average of the *twelve* years by 6.88 per 1,000 than previous to the Acts. Therefore, the Acts, and Acts alone, have produced this difference, and deserve the credit of it (499, 615).

He acknowledges that the average of the twelve years is higher by 1.02 per 1,000 than the ratio in 1866, and that the ratio of 26.64 per 1,000 in 1878 is higher by 1.87 than in 1866, but that does not matter. "The fall of 11.09 per 1,000 in the years previous to legislation was an accident." The average since 1866 has been below the previous average, though higher than the ratio at that date; and, as he is certain that his theory is the correct one, he is equally certain that the Acts have reduced secondary syphilis 6.88 per 1,000 on the average of the twelve years since 1866.

If his theory, "that all the improvement previous to the Acts is to be disregarded," is recognized as a sound one, his conclusions follow naturally from it; but if the reader, on looking at the circumstances, regards the fall of 11.09 per 1,000 from 1859 to 1866 as having been produced by the various moral and sanitary causes which Mr. Lawson acknowledges to have been in operation (847), then he will come to the conclusion that the Acts have failed in producing any reduction in secondary syphilis, since their introduction; which reduction, according to Sir Wm. Muir and most other advocates of the Acts, was their "main object." (312, 746 to 749.)

Upon the saving of efficiency as a result of the C. D. Acts, Mr. Lawson differs widely from Sir William Muir in claiming 387 men per day as saved, while Sir William Muir only claimed a saving of 190 men, both claims being, to a considerable extent, hypothetical, not real.

Neither of these statisticians claims only for the reduction that the Army Reports actually show in primary venereal sores, but they both make an assumption of imaginary saving that *would* be effected if the Acts were applied to all the stations. Sir William Muir, however, is the most moderate in this respect, and makes no claim for saving in gonorrhœa or secondary syphilis, in both of which he acknowledges the Acts to be failures. Mr. Lawson, on the contrary, claims a much larger saving in primary sores, because he "*assumes*" that there would have been so much *more* disease in the stations *under* the Acts if they had not been in force. He further claims a saving in secondary—not because the Army Returns show that there really has been any—but because every third case of primary is followed by secondary. Therefore: "If you prevent, say, three hundred cases of primary, you prevent one hundred of secondary, and you have therefore saved so much more efficiency." And he also claims a saving in gonorrhœa. Calculating, therefore, not only the saving which the Army Reports show, but also that which he claims for the assumed amount of disease prevented, and also what would have been prevented if the Acts had been more generally applied, he makes a total claim of 387 men saved daily.

Sir Wm. Muir's new tables show the actual saving—viz., 2½ men in secondary in the whole army, 124 men in primary in the protected stations as against 175 men in the unprotected ones—and 174 men in gonorrhœa in six years without Acts, as against 168 men in twelve years with Acts.

The portion of Mr. Lawson's evidence which appeared to surprise the Committee the most, was his statement that in examining the camp at Aldershot officially, he had found the amount of primary venereal sores varying in different regiments to an almost incredible extent. He had found it as low as 23 per 1,000 in one regiment (407), and as high as 142 per 1,000 in another (406), on the average of 44 weeks in succession (417); and "all were at the same time exposed to the same causes, so far as the operation of the Acts was concerned" (407). Such an "amazing discrepancy" (410) naturally led to inquiries as to what could be the influence of the C. D. Acts, when they could allow of such a difference.

"Would that discrepancy show, in your opinion, that the periodical examination of women cannot be of much use?"—"No, I should not like to say that, because a woman might get disease between one inspection and another, and may spread a great deal of disease between the two inspections" (521). "I admit it is a very curious thing" (522). "The women were all inspected by the same person" (523), "and all equally regularly" (524).

To most persons it would appear that these answers practically admitted the inefficiency of the periodical examinations.

(*To be continued.*)

THE ITALIAN SOCIETY OF ALIENISTS.

CONGRESSO DELLA SOCIETÁ FRENIATRICA ITALIANA.

Translated by T. P. CORBALLY, A.M., M.D.

A convention of the Italian Society of Alienists was held at Reggio-Emilia from the 23d to the 29th of September, 1880. The *Rivista Sperimentale*,* from which this notice of the convention is translated, is published quarterly in Reggio-Emilia. The Lunatic Asylum situated in this city is managed with more than usual ability, and has a reputation second to none in Italy. Several of the directors and edittors of the *Rivista* are connected with the institution, and are also well known as authors, and in their editorial management have shown ability of the highest order for the work they have undertaken. Prof. Carlo Livi, the founder of the *Rivista*, was at the time, Director of the Asylum, and Prof. Augusto Tamburini has taken his place both in the management of the journal and in the direction of the asylum.

The *Rivista* is not only the ablest journal of its kind, but it is believed to be the only journal, devoted exclusively to *legal medicine*, published in any language.

Dr. Morselli contributes to the *Rivista* the review of Prof. Verga's paper "On the Statistics and the Geographical Distribution of Some Forms of Mental Diseases in Italy." Prof. Verga first explains the basis on which the estimates, giving, more or less approximately, the number of the insane and their geographical distribution in Italy, are made. These sources are divided into three classes: 1st. Estimates from the census taken in Italy every ten years; 2d. From an examination of the cases of insanity and epilepsy treated in the various institutions at a given time, and this is the method preferred by Prof. Verga; 3d. From the study of certain special groups of individuals, and especially the study of the condition of all the youth registered for conscription into the army; these are subject, every year, to a careful and competent medical examination.

After discussing the value and the defects of each of these methods, the author gives the preference to the third, when estimating the geographical distribution of the disease. This method was followed by Broca, Boudin, Lagneau, Bertillon, and Chervin, and has afforded the most valuable results for the geographical nosology and the ethnology of France. The same system has been followed in Italy by Lombroso, Raseri, Sormani and others, with satisfactory results; indeed, this system is perfect as far as it goes, for it embraces every individual in the kingdom of the male sex who has attained the age of twenty years. The author answers some of the objections that may be urged against the system, and states that, whatever the means employed, the results have only relative values.

In speaking of the probable number of those suffering from ner-

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Rivista Sperimentale di Medicina Legale in relazione con l'antropologia e le scienze giuridiche e sociali, fondata dal PROF. CARLO LIVI, diretta dai Professori AUGUSTO TAMBURINI CAMILLO GOLGI, ARRIGO TAMASSIA, ENRICO MORSELLI e redatta dai Dottori C. Trebbi, G. RIVA, G. Seppilli, F. Venanzio, G. Buccola. Anno VI. Fascicolo III. e IV. Reggio-Emilia, 1880.

vous diseases, he alludes to the great number of the partially insane, of the weak-minded, and others who always escape the collectors of the census; there is, besides, an intermediate class who are not sent to asylums, that is rarely enumerated. He alludes also to a very numerous class that suffer from various forms of nervous diseases; as locomotor ataxia, in which a certain amount of delirium is usually an accompanying condition. Some consideration is also given to the causes of errors in general enumerations. From these causes, he draws the general conclusion that it is very difficult to determine the probable number of those afflicted with nervous and mental diseases in Italy. The census of 1871 shows the existence of more than forty thousand insane and idiots; but he thinks that the whole number of persons afflicted with madness would be more than double that. To this should also be added epileptics, who are not classed as insane, the hysterical, those suffering from chorea, ataxia, neuroses of various forms, from alcoholism, the hemiplegic and the paralytic—all which bear a very close analogy to those properly classed as insane. Then the author would include those born blind, deaf-mutes, in whom the absence of some of the most important of the senses hinders the proper development of the mental faculties.

The author adduces strong reasons for including all these classes in his estimates, and believes that the whole number would be about two hundred and eighty thousand individuals suffering from various affections referable to the nervous system. This is equivalent to saying that the two hundred and eightieth part of the population of Italy (1 in 280 inhabitants) is a madman, an idiot, or suffering from nervous disease of some sort.

The author then proceeds to give the results of his statistical researches on the conscripts, drawn during the ten years from 1849 to 1858. The observations thus collected amount to 2,726,038, the conscripts being, of course, twenty years of age, and he is convinced that the facts, as a whole, support very strongly the conclusions derived from other sources regarding the geographical nosology of Italy. Three tables, giving the geographical distribution of insanity, idiocy and epilepsy, were presented to the convention.

The average for the whole kingdom was as follows:

In every 10,000 youths conscripted

There	were	affected	with	insanity	2.18
"	"	"	"	idiocy or cretinism	10.51
"	"	"	"	epilepsy	11.53
"	"	"	"	nervous diseases in general	25.59

The number suffering from general nervous affections is greater than the sum of all the others, because it embraces, besides insane idiots and epileptics, those who were incurable paralytics, those affected with chorea, somnambulism and all the other forms of nervous diseases that may be properly included under this head.

The author states that his figures are not entitled to *absolute certainty*, because, at twenty years of age, insanity is of rare occurrence. However, he concludes from his researches that insanity, among the conscripts, is increasing with about the same rapidity that it is in other classes of the population; and that the number of conscripts

suffering from these diseases is relatively much greater in the north of Italy. A very large proportion comes from Sicily and Sardinia; this the author attributes to the climate, which, he supposes, tends to a precocious development of the organization. He finds that there are groups of provinces in which the intensity is equally great, as in the lower portion of Venice, Emilia, Liguria, etc.

The results regarding epilepsy and idiocy are more in accordance with general expectation. There exists, in Italy, a certain zone that is overburdened with idiots; and another, similar in all respects, only more heavily afflicted, exists in Sicily. The half of Sicily gives an extraordinary number of epileptics, mostly in the neighborhood of Catania and of Palermo; they are also found in great numbers in the district of Ravenna, which gives the largest proportion of any part of Italy. Liguria is remarkable for the number of epileptics among the conscripts, and Tuscany holds the third rank.

ON THE CAUSES OF INSANITY IN ITALY.

The author presented to the Congress his enumeration of the insane found in the asylums and hospitals in Italy on the night of December the 31st, 1877, from which it appears that pellagra is the most fruitful cause of insanity; as it has given 8.88 per cent. to the asylums; and if the districts in which this disease does not exist were excluded the per cent. would be enormously high.

The *second* cause is found in *cerebral diseases*, supposed to occur during intra-uterine life, or immediately after birth, from which result idiocy, cretenism and imbecility. This class gives 7.77 per cent.

The *third* class is limited to females, and is restricted to cases of functional disturbance of the reproductive organs, and those referable to maternity, in which the mental faculties are disturbed. The proportion is 6.93 per cent. Thus hysterical and puerperal insanity seem to be very prevalent.

The *fourth* cause is scarcely less influential—epilepsy among males, which gives 7.22 per cent.

Finally, alcoholism gives 3.92 per cent. of the insane, while venereal and other excesses, which give in females only 1.16 per cent, give 3.73 per cent. among males.

All the causes which contributed to these results, in the period from 1874 to 1877, have very much increased since that time.

Maniacal Exacerbations Independent of Terrestrial Magnetism.

The author gives the results of researches made by him, during many months, in the Ospedale Maggiore, of Milan, and in the asylums of Senavara, and of Mombello, regarding the influence of terrestrial magnetism on the exacerbations of insanity. As the results of his inquiries are not in accord with the views of Dr. Solivetti of Rome, nor with those of Dr. Ponza, he communicates a proposition of Prof. Schiaparelli, Director of the Astronomical Observatory of Brera, in Milan, by means of which a new method of inquiry will be opened, for the solution of the problem.

As the variations in the terrestrial magnetism follow, with great regularity, a period $11\frac{1}{9}$ years, corresponding with the maximum of

variations of the solar spots, and as the last great magnetic perturbation occurred in 1871, it is believed that the next will occur in 1882. The author therefore invites the directors of asylums to give special attention to the insane, to epileptics and the like, and to observe if there be anything remarkable in the manner of the development, in the frequency, the duration, or the severity of the disease.

It appears that insanity, epilepsy and other forms of nervous disease are greatly on the increase in Italy.* It seems hard to understand why the cause assigned by the learned Professor can explain it. He thinks the climate of Sicily and Sardinia promotes a more rapid development of the nervous system than that of other parts of the kingdom, and yet there are in Venice, etc., certain circles or groups of districts in which epilepsy and idiocy exist to an extraordinary extent. (Esiste, in Italia, una specie di zona media, carica di epilettici.) Would it not, under such circumstances, be more rational to look for local and moral causes rather than physical ones? Cannot the excess, in this particular, be traced to political and other exciting causes, which have evidently existed for a number of years past? Have not similar results followed extraordinary excitement in other countries, particularly in southern climates?

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Spallanzani: Comitato Promotore del Monumento a Lazzaro Spallanzani in Scandiano.—Spallanzani, the distinguished naturalist, was born in the town Scandiano, in 1729. The Italians are justly proud of his reputation, and propose to erect, by subscription, a monument in his native place to perpetuate his name. This is a merited compliment to the founder of experimental physiology. Science and humanity are alike indebted to his genius. Whoever, today, is engaged in following the course that he first marked out, and in teaching or in studying the doctrines that first found utterance from his lips, will, no doubt, in every way possible, encourage this undertaking.

The committee promise that, if their efforts are properly seconded, a monument of white marble worthy of his name, will be dedicated to his memory on the 21st of August, 1885, the hundredth anniversary of the embarkation of Spallanzani at Venice for his memorable journey to the East.

Prof. Moritz Schiff represents the Committee in Geneva, Switzerland; and in London, England, Prof. Charles Darwin and Louis Fagan, Esq., of the British Museum.

T. P. C.

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*(Si scorge dai quadri grafici come la precocitá della pazzia sia in rapporto generale colla tendenza di tutta la popolazione a incontrarla e come il numero dei coscritti pazzi sia piu relevante nelle provinzie settentrionali.)

MENU.

"**Whole meal**" flour, as that which includes the entire coat of the wheat grain is called, is undoubtedly very good for laborious people who are in a perfect state of health, whose digestive organs are not easily deranged. But it is certainly not quite so palatable as refined flour, and there are many persons, and some healthy ones with delicate digestive organs, to whom the particles of insoluble woody fibre of wheat grain husks is decidedly objectionable and mischievous; and for invalids it had better be avoided altogether. The notion in regard to the higher nutritive value of whole wheat flour depends upon the food taken with it. For persons who live on bread alone, if there are any such persons, it may be preferable; but with the ordinary variety of food which people in general live upon, the superior nutritive value claimed for flour which includes the whole of the wheat grain is fallacious.

Stewed Salsify (Oyster Plant).—Scrape the salsify and throw into fresh water, cut into small pieces and put it into an agate ware stewpan (if it is put in iron it will turn black), add a piece of butter, pepper and salt to taste, and very little water, let it simmer for half an hour, then mix some flour and milk together and add while you stir it. Put at the back of the stove and let it simmer gently until done; serve in a vegetable dish, or as oyster sauce, when oysters are out of season.

Marechal Salad.—Boil two heads of lettuce, then cut each in eight pieces, add some minced potatoes, sprigs of cauliflower, string beans and cold slaw, all boiled in salt water. Strain and mix in some chopped gherkins, beets, anchovies, capers and small white pickled onions. Roast some little bread balls crisp, dip them in olive oil and add to the foregoing. Serve in a salad bowl garnished with hard boiled eggs, anchovies and herbs.—*Chas. Randhoffer, Chef de Cuisine L. Delmonico.*

Fresh Mushrooms.—Too great care cannot be exercised in the use of fresh mushrooms. To know if they are good, put a little salt on the gills; if they turn black they are good. The old way of broiling them and serving hot on buttered toast is hard to improve upon. But here are two more ways: Clean and trim off the roots, dip them in melted butter, roll them in bread crumbs, lay them in a dish that will not break with heat, and brown in a quick oven. Or cut them in quarters and wash in several waters, then fry them slowly in fresh butter, with parsley, salt, and pepper.

Boiled Onions, to be free of strong odor, should be boiled in salted water for ten minutes, and then put in cold fresh water for half an hour; after that they should be put into a stew-pan with just enough cold fresh water to cover them, and boiled gently till tender. Drain and serve with melted butter.

Editor's Table.

"**The Hygiene of Emigrant Ships**"* is the most timely and important paper on the subject of which it treats, hitherto published—it should not fail of immediate utilization.

The author of this paper is well known to have enjoyed and to have availed himself of an extensive field of observation in the naval service; to have been the first to point out the special dangers of excessive moisture on board ship; the first to demonstrate the utility of, and to inaugurate meteorological observations on board naval vessels; to have specially investigated the chemistry of, and the danger of emanations from bilge water; to have made special investigations with applied observations on the Hygiene of the Naval and Merchant Marine in general; to have made recently a searching investigation of Arctic Hygiene, with original and practical deductions therefrom; to be, in short, foremost of practical naval and marine hygienists. In taking up the special subject of hygiene on board emigrant vessels, therefore, Dr. Turner has brought such an amount of practical knowledge to bear upon it, as ought to, and doubtless will, attract the immediate attention of the public authorities and emigrant ship companies. With a thorough mastery of the subject, he, at the outset, lays it open to the reader—appends for ready reference an abstract of all the laws now in force for the protection of emigrants, proposed action now before Congress, extracts from recent publications on the abuses of emigrant passengers, forms for sanitary reports, etc. All this he confronts with a ready and practical knowledge. Shows how far the laws have been in any way beneficial, how far they have fallen short of their aim, wherein their observance has been impracticable or neglected, and the waste of health and life in consequence of their inadequacy. The ship, too, in her construction and appointments, is subjected to the same comprehensive scrutiny. Remedial defects are pointed out with such clearness as will surely not fail to command the attention of all intelligent and humane owners and masters. Cleanliness, dryness and ventilation are urged as the ever essential conditions of healthfulness on board ship, and these three con-

* By Thomas J. Turner, A.M., M.D., Ph.D., Medical Director U. S. Navy. Read before the American Public Health Association, New Orleans, December, 1880. Pamphlet, pp. 70. From the Reports and Papers. Boston: Franklin Press: Rand, Avery & Co.

ditions are shown to always involve a fourth—*space*—without which, cleanliness, dryness and ventilation are impracticable, and health impossible.

The importance of sufficient space for health is particularly dwelt upon, because the want of it hitherto has been the chief cause of the misery and mortality incident to emigrant ships at all times, and everywhere. In this, especially, Dr. Turner fortifies his own conclusions by citations of other observers, and urges the following formulated sanitary law from the Fourth National Quarantine Convention, held in Boston, 1860, as a guide to legislation upon the passenger capacity of all vessels:

"But in no case should the number of individuals to be accommodated on any vessel, or in any apartment provided for the accommodation of crew or passengers, exceed in ratio one individual to every four hundred cubic feet of air space, together with provision for ventilation in all weathers."—Fully recognizing the impracticability plea, with which this suggestion will continue to be met, he cogently strengthens it by *life* tests, at once the most delicate, the most conclusive and unanswerable. And in this answer he comprehends the special defects of proposed legislation, as well as the failure of that already in existence—a bill now being before Congress which provides one hundred to one hundred and twenty cubic feet of air-space on the two passenger decks respectively, for each adult, and only half as much for children under eight years of age, and for very inadequate means of ventilation. Equally defective it is too in its provisions for food and water; and in hospital accommodation for the sick. These defects in the proposed legislation are prominently brought out, measured and condemned by past experience.

Of means of ventilation, Dr. Turner recommends, as the most efficient, a modification of the Napierian plan—a system of tubes connecting every enclosed space, and extracting the air by exhaust fans driven by steam. "Any system of ventilation, however," he remarks, "that does not get rid of bilge-air, is worthless, from a sanitary point of view." And bilge-air, as the product of bilge-water, he would effectually prevent by pumping out the bilge-water every watch, and the liberal use of a solution of sulphate of iron daily in the bilges and limbers.

Of food, and the manner of cooking and serving it, he recommends the naval ration, with the addition of wholesome milk for the sustenance of children, and a division of the passengers into messes, with a messman to each, with stated times for serving—after the manner of a man-of-war—as being altogether preferable to the irregular practices which now for the most part obtain. Stewards and stewardesses

—the latter with special reference to female passengers with children —should be appointed; of the former, one to every hundred male passengers, and of the latter one to every fifty female passengers, whose duties should be to supervise the passengers and their apartments, and see that both are kept clean.

"As soon after departure as possible, the emigrants should be grouped into messes of twenty, one of the twenty to act as messman, under the direction of the steward. The duty of the messman should be to look after the cleanliness of the mess-gear, the tables, pots, pans, etc., to receive the cooked food from the galley, or camboose; and to see the meals served.

"The cooked food should be inspected before serving out by the officer of the watch, to see that it is properly cooked.

"Call all passengers at 5.30 A. M., except women and children, serve out coffee and biscuit; and have the men bathe themselves on the spar-deck, weather permitting, and clear up the decks afterwards.

"At 6.30 up all bedding, if the weather is favorable. Call the women and children, and have them wash and dress themselves. At 7 A. M. call all hands to breakfast. At 8 A. M. clean up, sweep down, cleanse berths, keep all hands on deck except the sick and working gangs. 9 A. M. serve out provisions. 10 A. M. messmen to report to steerage stewards their decks, mess-gear, berths, etc., ready for inspection. At 10.30 A. M. an inspection to be made by the captain and medical officer. At 11 A. M., after inspection, spread mess-gear for dinner. 12 M., dinner. 1.30 P. M., clean up, sweep down, put away mess-gear. 2.30 P. M., down all bedding and make up berths. 4 P. M., prepare for supper. 5 P. M., supper. 6.30 P. M., clean up, sweep down, put away mess-gear. 8 P. M., pipe down, turn in, out all fires and lights, except those in charge of the watch. No naked lights to be allowed, nor smoking between decks, nor friction matches of any kind whatever to be carried by emigrants.

"On Saturdays let the emigrant wash his clothes, the clothes-lines to be rove on Friday evenings. Some such method as this specified can be made, and a captain who cannot arrange some such routine is incompetent to take charge of a passenger vessel. The writer would have steamship companies mulct heavily for carrying passengers in excess of the law; or, failing to secure immunity from overcrowding, by expensive suits at law, prohibit the landing of any passengers carried in excess of the limits established by our own statutes. Steamship companies, under such ruling, would soon cease this murderous custom."

Special stress is laid upon the importance of sanitary inspection, the competency of the inspector, and the sanitary surveillance of the vessel not only, but of everything pertaining to her, from the outset. "Indeed, the sanitary care of a vessel should commence with the laying of her keel, removing, as the vessel progresses in building, all the *débris* that collects during the construction; to see that all the permanently enclosed spaces, especially those between the ribs, are free from dirt, chips, sawdust, and all other kinds of refuse." To this

degree, inspection may safely be entrusted to intelligent ship architects; but not beyond it.

No vessel, whatever may be her rate or duty, should be exempt from a searching inspection by a competent sanitary officer. And in this regard, the "customs of the service," in virtue of which captains arrogate to themselves the necessary knowledge and responsibility of pronouncing upon the qualities of the food, water, and air supplies, in their relations to the health of persons on board, is justly held to be preposterous and dangerous to all concerned. Inspections of all vessels should be made previous to taking cargo or passengers on board, with a view to cleanliness, at the port of departure, and of all passenger vessels especially, again inspected after receiving cargo and passengers. This examination should comprehend food and water supplies, space, and the conditions thereof; the cargo in its relation to healthfulness of the vessel, and of every person on board, for protection against contagious diseases. It is apparent that these inspections can be intelligently made by competent medical officers only.

The medical officers of all vessels—and presumably no emigrant passenger vessel sails without one—should be made the responsible sanitary authority, whose special mission it should be to exercise sanitary surveillance of the vessel, to watch the health of the crew and passengers, to see that the rules of hygiene are observed, to make daily report of the conditions and needful suggestions to the captain, to keep a record of all circumstances relating to the sanitary condition of the vessel and persons on board, and to note the history and treatment of all diseases and accidents. And it should be made the duty of the captain to carry out, as far as practicable, all the suggestions of the medical officer in regard to the sanitary condition of the vessel, and all persons on board.

Thus, throughout, the paper before us is alike comprehensive and clear in detail of purpose and fruitfulness of resources for the highest degree of efficiency. We commend it to the attention of both the National and State authorities, and especially to the emigrant steamship companies, with the sincere hope that they will hasten to illustrate its utility in anticipation of legislative action. Sanitary knowledge is proverbially of slow growth, and nowhere slower than on board ship. But that which was tolerable in the days of sailing passenger vessels and the "middle passage," is criminal now. On evidence which we feel bound to accept, there has never been a time since the days of the "middle passage," when emigrant ships, in their greed for gain, have been a more prolific abode of crime and wretchedness than the present. And yet the public is only beginning to awake to a realization of this fact, and the ship companies appear to be not in the least concerned about it!

Connecticut State Board of Health.—Third Annual Report, for the fiscal year ending November 30, 1880, with the Registration Report, 1879, pp. 252–90, opens with a felicitous general report on the progress of sanitation in the State, and the progress made in the cultivation of public sentiment favorable to the work of the Board. There have been more epidemics than for the previous year, but they appear to have been more promptly met, hence there has been a comparatively small mortality from them—the most prevalent being measles, from which the schools have in particular suffered. Of malarial diseases several new forms have been reported: broncho-pneumonia, cystitis and enteric varieties; and congestive chills of increasing frequency. Pneumonia, bronchitis and pleurisy have been unusually prevalent, and continuing even into the summer months. Typhoid fever and diarrhœal diseases have been epidemic locally in several instances. Small-pox reappears in the mortality lists for the first time since 1876—"it broke out among a colony of Portuguese, many of whom were sailors." Impure waters have considerably engaged the attention of the Board, and many dangers have been pointed out, from the relative situations of ice-houses, foul ponds, wells and cesspools. South Manchester is specially reported upon, illustrated by a topographical map, showing the relations of typhoid fever to water pollution from a variety of causes—cesspools, factory drainage, decayed vegetation, etc.; and this place is cited as one of many, though generally to a less degree, which account for numerous local epidemics of typhoid fever and other filth diseases throughout the State.

Color-blindness has continued to receive the attention of the Board, in execution of the law requiring all railroad employees engaged in running trains to be examined concerning their acuteness of vision and color perception. Of 1950 employees examined by Drs. W. T. Bacon and W. H. Carmalt, examining ophthalmic surgeons, 29 were refused certificates; 9 voluntarily relinquished their occupation on finding their vision defective.

Of special reports, *Relations of Modern Health Boards to Material Prosperity and Wealth of a Community*, by Prof. W. H. Brewer, we have, by permission, already published (Vol. VIII., p. 491). *The Manufacture of India Rubber Goods*, as related to the Health of the Operatives, by Walter R. Bartlett, M.D., is particularly interesting as being the first paper on this subject (which has fallen under our observation at least) as showing, apparently, the ill effects of working in benzine on the urinary organs—benzine being largely used in the process of this manufacture; and the specially bad influence of an excessively laborious operation in the cementing and varnishing rooms on young female operatives. Reports on the *Hygienic Con-*

struction and Plans for Warming and Ventilating the Bridgeport High School Building, by Richard Briggs, C. E., and W. R. Briggs, Architecht, are particularly noteworthy in the progress of school hygiene. The result is probably the highest degree of perfection yet attained in the process of warming and ventilation of a school-room by means of *indirect* radiation from steam heat. *The Prevailing Methods of Sewage Disposal*, by C. A. Lindsley, M.D., are well described, and he very justly urges perfection in house drainage as of primary importance, whatever the system of outside sewage receptacle or disposal. *The Transmission of Tuberculosis from the Meat and Milk of Infected Animals*, by Dr. N. Cressy, V. S., summarizes the progress made in the investigation of this subject in European Veterinary Colleges in recent years, and dwells especially upon the hereditary nature of tuberculosis in some of our most highly prized breeds, as heretofore shown by Professor Law, of Cornell University, and also observed by himself. The subject is of grave importance, requiring more attention on the part of Boards of Health and veterinarians in the United States than has hitherto been given it.

The Secretary of the Board, C. W. Chamberlain, M.D., besides summarizing the work of the Board, and all the contributions for the year, specially reports on *Sewerage Problems:* the Intercepting Sewer for Hartford, with Comments; and the Sewerage of New London, with Report of Col. George E, Waring, Jr. These reports are illustrated by diagrams, comprehending the special danger to the healthfulness of Hartford from the sewage fouling of Park River, and the necessity of an improved outfall. A description of the soil pollution of and around New London, and a letter from Col. Waring, show the urgent importance of sewerage for that city, and Col. Waring's preference for small sewers and flush-tanks as being the most economical and efficient means—utilizing therewith, as far as practicable, several sewers which now exist in the city, but at present inefficient.

THE REGISTRATION REPORT FOR 1879 shows a marked improvement over the previous report—of deaths believed to be complete, and of births and marriages nearly so. Population: 625,887.

Births, 14,051; rate per 1,000 22.4. *Marriages*, 4,373. *Deaths*, 9,394; rate per 1,000 15. *Divorces*, 316: one for every 13.8 marriages, against one for every 10.6 the year previous. Of causes of death: zymotic diseases killed 26.14 per cent; constitutional, 21.37; local, 33.98; developmental, 14.52; violence, 3.10. Of particular diseases: consumption, 1,307; other lung diseases, 950; diphtheria and croup, 405; typhoid and typho-malarial fevers, 376; diarrhœal diseases, 512; heart diseases, 440; still-born, 286. "The number of deaths from pneumonia is unusually large—626 . . . there were many reported as

typhoid-pneumonia, and in others the description resembled closely the pyogenic form, due to filth."

The report concludes with the laws concerning the registration of births, marriages and deaths, which are shown by the report to be among the most efficacious in this country.

New Haven—Eighth Annual Report of Board of Health, 1880—continues to show gratifying encouragement in the progress of public health administration. Taking the death-rate as the truest measure of progress, Professor Brewer, President of the Board, aptly sums up:

"The death-rate of the city for the four year previous to the organization of the Board (1869 to 1872 inclusive), was respectively 23.4, 25, 19.7 and 22.3 per 1,000. The average of these is 22.6, and the total number of deaths recorded during those four year was 4,676.

"The death rate for the last four years (1877 to 1880 inclusive), is respectively 19.7, 18, 16.7, 17.8, the average of the four is 18.1, and during the four years there was a total of 4,389 deaths. The population of the city from 1870 to 1880 increased 12,000, but the deaths for the four years were 287 less than in the former four years. . . . . Here, then, is already *a saving of about two hundred and sixty lives per year* as the actual result of better sanitation."

Such illustrations of sanitary work need no comment. The health officer's report corresponds with the excellent results. *Cleanliness* is the text and the amen, between which is comprehended all the relations of the highways and the domiciles, food and drink. The chief causes of death for the year were: Consumption, 165; other diseases of the respiratory system, 118; diarrhœal diseases, 67; diphtheria and croup, 73; typho-malarial fever, 18; typhoid fever, 15; cerebral meningitis, 33; convulsions, 47; measles, 22; whooping cough, 21; marasmus, 22; diseases of the heart, 55.

Births recorded, 1,742; stillbirths, 47; *marriages*, 563.

Utica, N. Y.—Annual Report of the Board of Health, 1880, with a population of 33,923, reports: *Marriages* (very incomplete), 128; *births*, 759; *deaths*, 483—14.26 per 1,000. Chief causes of death: Consumption, 73; acute lung diseases, 46; diarrhœal diseases, 37; heart diseases, 22; whooping cough, 17; typhoid fever, 8; other fevers, 11; diphtheria, 7; insanity (in State Lunatic Asylum), 35. By subtracting these from the total number of deaths reported, the ratio of mortality per 1,000 for the city is reduced to 13.23. *Malaria* is particularly dwelt upon as a prevailing cause of sickness and death, in consequence of the swampy condition of the banks of the Chenango Canal and the overflow of the Basin in the eastern part of the city. Insufficient sewerage, surface filth, foul cellars and the use of impure well water in certain parts of the city are also described as fruitful sources of diseases, requiring the earnest attention of the city authorities for their abatement.

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending May 14, 1881. **Abbreviations:** c, consumption; a l d, acute lung diseases; s f, scarlet fever; ms, measles; w c, whooping cough; d-c, diphtheria and croup; t f, typhoid and typhus fevers; s p, small pox; y f, yellow fever; ch, cholera; dl d, diarrhœal diseases; c d, contagious diseases.

Atlanta, Ga., 37,421: 14; 6; 19.3.—
Baltimore, Md., 332,190: 116; 45; 18.1.—
Boston, Mass., 362,535: 170; 51; 24.5.—c, 33; a l d, 25; d-c, 17.
Brooklyn, N.Y., 566,689: 282; 114; 26.0.—c, 36; a l d, 27; s f, 22; d-c, 32.
Buffalo, N. Y., 155,137: 57; 20; 21.7.—c, 7; a l d, 9; s f, 6.
Cambridge, Mass., 52,800: 16; 5; 17.7.—
Camden, N. J., 41,658: 22; 9; 27.5.—
Charleston, S. C., 49,990: 49; 18; 51.1.—c, 8; s f, 6.
Chicago, Ill., 503,304: 361; 230; 37.4.—dl d, 40; d-c, 15; a l d, 29.
Cincinnati, O., 255,708: 114; 37; 23.3.—c, 17; a l d, 9.
Cleveland, O., 160,140: 82; —; 26.7.—c, 9; a l d, 10; d-c, 7,
Dayton, O., 38,677: 13; 7; 17.4.—
Dis. Columbia, 180,000: 82; 32; 23.7.—c, 19; a l d, 12.
Evansville, Ind., 29,280: 12; 3; 21.4.—
Fall River, Mass, 49,000: 19; 6; 17.0.—
Hudson Co., N. J., 187,950: 82; 24; 22.8.—
Indianapolis, Ind., 75,074: 30; 8; 20.9.—
Kansas City, Mo., 60,000: 8; 4; 8.0.—
Lawrence, Mass., 39,178: 11; 4; 14.7.—
Louisville, Ky., 123,625: 41; 9; 17.3.
Lowell, Mass., 59,485: 27; 13; 23.7.—
Lynn, Mass., 38,284: 14; 2; 19.1.—
Memphis, Tenn., 33,593: 15; 6; 23.3.—
Milwaukee, 115,578: 60; 36; 26.9.—
Mobile, Ala., 31,205: 19; 7; 31.8.—
Nashville, 43,461: 20; 5; 24.0.—
Newark, N. J., 136,400: 66; 23; 25.2.—
New Haven, Conn., 62,882: 27; 5; 22.4.—
New Orleans, La., 216,140: 160; 60; 38.5.—c, 23; dl d, 33; s f, 10.
New York, 1,206,577: 822; 350; 35.5.—d-c, 67; s f, 55; s p, 19.
Omaha, Neb., 30,518: 6; 4; 10.3.—
Peoria, Ill., 34,850: 15; 2; 26.7.—
Philadelphia, Pa., 846,980: 380; 123; 23.4.—s f, 19; a l d, 38; d-c, 11.
Pittsburg, Pa., 156,381: 100; 42; 33.4.—s f, 12; a l d, 11; c, 14.
Portland, Me., 33,810: 16; 5; 24.7.—
Providence, R. I., 104,852: 49; 13; 24.4.—
Richmond, Va., 63,803: 34; 12; 27.8.—
Rochester, N. Y., 89,363: 36; 12; 21.0.—
San Francisco, Cal., 233,956: 68; 18; 15.2.—
Savannah, Ga., 30,681: 26; 7; 44.2.—
Springfield, Mass., 33,340: 17; 6; 26.6.—
St. Louis, Mo., 350,522: 127; 54; 18.9.—
Utica, N. Y., 33,913: 7; 1; 10.8.—
Wilmington, Del., 42,499: 36; 17; 44.2.—s p, 12.
Worcester, Mass., 58,295: 22; 14; 19.7.—

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at latest weekly returns received.

Alexandria, Egypt, 212,034, May 7, 139; 34.1.—dl d, 18.
Amsterdam, Holland, 326,203, May 14, 165; 26.3.—
Antwerp, Belgium, 173,643, April 30, 71; 21.3.—s p, 2.
Barcelona, Spain, 260,000, May 14, 130; 26.0.—ms 9; t f, 4,
Belfast, Ireland, 174,412, May 21,'95; 28.3.—t f, 4; w c 6.
Berlin, Germany, 1,123,571, May 15, 477; 22.1.—s f, 16; d-c, 21.
Birmingham, England, 400,680, May 21, 157; 20.4.—w c, 11; s f, 4.
Bombay, India, 644,405, April 26, 414; 33.4.—"Fevers," 128.
Bremen, Germany, 112,200, May 14, 67; 31.1.—ms, 17; a l d, 14.
Breslau, Germany, 273,000, May 15, 155; 29.5.—s f, 4; d-c, 6.
Bristol and Clifton, England, 217,185, May 21, 76; 18.3.—ms, 8; s f, 4.
Brussels, Belgium, 377,458, May 21, 164; 22.6.—t f, 4; ms, 3.
Bucharest, Roumania, 200,000, May 14, 97; 25.2.—d-c, 4; s p, 1.
Buda-Pesth, Hungary, 370,370, May 14, 277; 38.9.—s p, 11; t f, 9; s f, 5.
Calcutta, India, 429,535, April 16, 379; 46.0.—s p, 13; ch, 123.
Christiania, Norway, 120,000, May 21, 49; 21.2.—
Copenhagen, Denmark, 235,254, May 17, 132; 29.—w c, 6; d-c, 3.
Dresden, Saxony, 220,216, May 15, 87; 20.5.—d-c, 6.
Dublin, Ireland, 333,401, May 21, 155; 24.2.—t f, 7.
Edinburgh, 233,666, May 21, 84; 18.7.—
Genoa, Italy, 180,625, May 7, 82; 23.1.—
Glasgow, Scotland, 601,266, May 21, 237; 20.5.—ms, 8; d-c, 6.
Havana, Cuba, 195,437, May 7, 132; 35.2.—s p, 2½; t f, 11.
Lisbon, Portugal, 225,152, April 30, 99; 25.3.—d-c, 4; t f, 2.
Liverpool, England, 549,834, May 7, 233; 22.1.—t f, 10.
Lyons, France, 342,815, May 14, 168; 25.5.—s p, 10; d-c, 6.
Madras, India, 397,552, Feb. 18, 348; 45.5.—s p, 47; "fevers," 82.
Malaga, Spain, 115,882, May 19, 79; 35.4.—s p, 1.
Montreal, Canada, 135,000, April 30, 77; 29.8.—"contagious dis.," 7.
Munich, Germany, 230,000, May 15, 158; 35.7.—s p, 1; d-c, 6; s f, 4.
Paris, France, 1,988,806, May 19, 1,102; 28.8.—s p, 29; t f, 34; d-c, 28.
Rio de Janeiro, Brazil, 330,000, April 23, 206; 32.6.—y f, 6; t f 4; s p, 2.
Rome, Italy, 305,469, May 7, 170; 28.9.—t f, 7; s p, 2; d-c, 6.
Stockholm, Sweden, 169,429, May 14, 87; 27.7.—d-c, 4.
St. Petersb'g, Rus., 669,741, May 14, 806; 62.6.—t f, 164; s f, 16; s p, 7.
Trieste, Austria, 128,295, May 7, 78; 31.6.—d-c, 5; s p, 1.
Turin, Italy, 236,658, April 16, 146; 31.5.—t f, 9; d-c, 10.
Venice, Italy, 141,615, May 14, 65; 23.9.—
Warsaw, Rus. Poland, 357,169, May 7, 200; 29.1.—t f, 11; s p, 2; d-c, 5.

The Prisons and Public Charities of Tennessee, according to a report by T. A. Atchison, M.D., chairman of a committee of the State Board of Health, are insufficient, inefficient, abominably overcrowded, filthy and deadly. Some of the old jails, built of green logs, are airy and relatively healthy, by reason of the free access of air through numerous crevices and easily enlarged open spaces—hence they are practically easy of egress—and very imperfectly fulfill their intended purpose. The penitentiary in the central part of the city of Nashville is execrable in all respects. Since its erection

the city has been built up around it, and it has become the enduring focus of filth diseases to the people round about, and the nidus of several epidemics. With a constructive capacity for 250 or 300 as the utmost limit, it is now reported as being habitually crowded with two or three times that number: *human beings packed into foul cells soaking in filth, and with an average of about one hundred and twenty-five cubic feet of air space to each one* is manslaughter and murder by the State authorities, no less surely—and even more cruelly—than the same crime, otherwise committed it may be, by the prisoners whom they confine. There is but one institution for the care of the insane which is in good condition, but overcrowded—"not being sufficient for more than one-half of the insane who imperatively require hospital restraint and treatment." The report is a cogent one, and ought not to fail in securing the greatly needed attention of the State authorities.

Literature.

Edwards' Ventilation and Heat* is a work which all persons interested in the subjects of which it treats ought to possess, and which no architect can afford to be without. It is divided into five chapters: (1) An introductory, which gives a sketch of practical ventilation as illustrated by the works of those who have engaged in it; (2) Of some simple appliances for Ventilating Dwelling-houses; (3) London Smoke and Fog; (4) Modern Fireplaces, Ventilation and Smoky Chimneys; and (5) Some Considerations on the Utilization of Waste Heat from Open Fireplaces, and on a Comprehensive Scheme for the supply of Heat to Dwellings. These are subdivided into appropriate section headings, illustrated by explanatory diagrams. The first chapter is especially interesting and instructive on the progressive steps in ventilation on a large scale, as illustrated in the measures undertaken for the ventilation of the Houses of Parliament, and the degree of perfection finally attained. The second is scarcely less entertaining, as showing the age and sufficiently proven inefficiency of numerous "new" ideas. London Smoke is of course treated as of special local interest; and it is somewhat surprising that the author's suggestions of remedies do not comprehend as fully as there

* The Ventilation of Dwelling Houses and the Utilization of Waste Heat from open Fireplaces, including Chapters on London Smoke and Fog, Modern Fireplaces, etc. By Frederick Edwards, Jr., author of "Our Domestic Fireplaces," "A Treatise on Smoky Chimneys," etc. Second edition, 8vo, pp. 158. Copiously illustrated. London: Longmans, Green & Co.

seems to be good reason for, that which is best known in this country as the Lockport System of warming, which he mentions in this chapter, but tacitly rejects. This is probably the most practical as well as the most economical way of overcoming the intolerable nuisance of smoke, whether for London, or, it may be, for even so small a place as Lockport, "where as many as two hundred houses have been heated." According to the description of which the author quotes from the *Times*: "The difficulty of applying this system to existing houses appears to be overwhelming." This is a great mistake. The system is exceedingly simple, and abundantly practical, whether for a small or a large place. For the latter, centres of distribution may be multiplied according to the necessities of the case, and whether for one centre or many centres, smoke consumption should be made a prime necessity.—Chapters four and five are chiefly devoted to the construction of chimneys and grates, their special advantages as means of ventilation, and their economical relations as means of warming. Comparatively little is said of hot water and steam, but enough to show their special need in large buildings. But in all their applications, as, indeed, also in fire-grates, the author specially favors indirect to direct radiation; would in all cases of outside low temperature introduce air—warmed air if possible—and gives several ingenious arrangements of chimney-flues and grate-settings, calculated to accomplish this purpose.

Henderson's Handbook of Plants* is a book of reference for florists, gardeners, and amateurs interested in horticulture; a concise encyclopædia of plants, containing just enough of descriptive knowledge to be of great practical utility. A comprehensive glossary of botanical and technical terms, together with horticultural terms and practices, is appended to the work, and instructions for the culture of many important plants, the laying out of grounds, etc.—making it equally valuable to the practical horticulturist and the amateur. Acknowledgments are made in the introduction to Mr. C. L. Allen, of Garden City, L. I., for assistance in getting up the work—a guaranty of excellence which ought, and doubtless will, commend it to many readers.

"How We Fed the Baby"† is the tempting title, to mothers, of a well-written little book, the central feature of which is the detail of the author's successful experiment with his own infant, and a kitten,

*By Peter Henderson, author of "Gardening for Profit," "Practical Floriculture," "Gardening for Pleasure," etc., etc.; 8vo., pp. 410. New York: Peter Henderson & Co.

† "How We Fed the Baby," to make her healthy and happy; with health hints. By C. E. Page, M.D. 144 pages. Paper, 50 cents; cloth, 75 cents. New York: Fowler & Wells.

on an unusually restricted diet. Hence, he takes it for granted that all children are over-fed, and as overfeeding is a common cause of infantile derangements, a half-starvation diet is the panacea for all ills that infants are heir to, and the true secret of feline friskiness. Like radicals generally, the author is well versed in his subject—made himself so, evidently, in search of knowledge to sustain his theory. But his facts strongly remind one of the trite old apothegm—"It takes more than two swallows to make a summer." *One* baby and *one* kitten are insufficient to overthrow the hitherto accepted physiological doctrine that the young of all animals require food at relatively short intervals. "Relatively short," however, the author may still claim adherence to, for he advocates two meals a day only for adults and three for babies and kittens, as quite sufficient to keep up muscular strength and to keep down fat, which he regards in both infants and kittens as evidence of over-feeding.

Reminiscences of Spurzheim and George Combe* is a well-written and handsomely gotten up book, which will be sure to interest all believers in phrenology, and all who would know the groundwork of that belief as taught by one of its earliest and best advocates.

Publications Received.—Chicago Department of Health Report, 1879 and 1880; Dayton Board of Health Report, 1880; Brigham Hall Hospital for the Insane Report, 1880; Pennsylvania State Asylum for Relief of Insane, 64th Annual Report; Dengue Fever of 1880—Louis A. Falligant, M.D.; New York Dispensary, 91st Annual Report; Excision of the Rectum for Malignant Disease—N. Senn, M.D.; Retreat for the Insane, Hartford, Conn., 57th Annual Report; Register of the Non-Commissioned Staff, U. S. A.; Favus—L. D. Bulkley, M.D.; New York Water Supply Report, by Isaac Newton, C.E.; Report of the Health Officer of the D. C., 1880; Transactions National Eclectic Medical Association, 1880-'81; Benedikt on Brains of Criminals—Wm. Wood & Co.; Medical Register, New York, New Jersey and Connecticut—G. P. Putnam's Sons.

* A Review of the Science of Phrenology from the Time of its Discovery by Dr. Gall, to the Time of the Visit of George Combe to the United States, in 1838-'40, with a new Portrait of Spurzheim. By Nahum Capen, LL.D., author of "Biography of Spurzheim," "Republic of the United States," "History of Democracy," etc. 1 vol. 12 mo, extra cloth. Price, $1.50. New York: Fowler & Wells.

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SANITARY SUGGESTIONS FOR THE INFORMATION AND GUIDANCE OF THE JEANETTE SEARCH EXPEDITION.

By P. S. WALES, M.D., Surgeon-General U. S. Navy, in compliance with the request of Rear-Admiral John Rodgers, President of the Jeanette Relief Board.

The exacting requirements of Arctic life display the cardinal importance of selecting persons of the most vigorous vital powers and highest moral qualities for expeditions, of whatever character, undertaken to penetrate the solitudes and encounter the dangers of high latitudes. The physical and moral qualifications of the *personnel* should be scrutinized minutely, both as regards early history and present condition, with the view of determining these necessary questions. The ages between which these qualities may be found most highly developed are twenty-five and thirty-seven, or during the third and fourth decennaries of life. There should not be manifest any unusual tendency to corpulence or thinness, as both extremes suggest suspicions of defect of health. The physiological proportions of the weight to the height may be stated generally as within the range of two and two and a half pounds to the inch of stature. Persons of moderate height, between 5 feet 6 inches and 5 feet 10 inches, have usually more endurance than wider ranges. It will be advisable not to select any recruit who presents evidence of any past constitutional disease, particularly scrofula, syphilis and rheumatism, or tendency thereto, although he may be of apparently robust constitution. The temperament best suited to Arctic service is that known as the sanguine; persons of this group are endowed with a more vigorous power of assimilation, active circulation, florid skin, large firm muscles, and capacity for brisk movements and prolonged exertion. Another notable quality is a superior power of eliminating animal heat under low temperatures, so justly esteemed by Sir John Ross of first importance to sojourners in high latitudes. The heat-producing power is possessed in varying degrees by per-

sons of the same seemingly vigorous organization. A degree of extreme cold that would be simply invigorating to one, might produce in another painful or even exhausting depression. This fact is seen in every-day experiences, and is referred to by Arctic travelers. Unfortunately, there is no ready test to determine this desirable quality; yet it may be asserted that it is possessed by northern peoples, Norwegians, Danes, Swedes, Canadians and New Englanders, in greater degree than those of the south—a circumstance due in part to inherited powers and in part to acquired adaptability. It would be advisable, as far as practicable, to recruit Arctic ships from those northern regions, and from persons of the type and character above described, particularly from those who have already had experience in Arctic traveling. The sanguine temperament finally presents the most useful moral qualities, especially resistance to the depressing influences of prolonged Arctic nights and daily hardships and dangers; it is linked with a humorous, lively, good-natured and hopeful disposition, so essential to the successful and harmonious prosecution of such enterprises. The reverse of this temperament is that including persons of portly habit, sluggish movement, dark complexioned, with feeble heart power, tardy circulation, and inclined to indulge in gloomy emotions—a class of individuals little fitted for such service.

The sanitary condition of the ship is of no less importance than the procurement of a healthy and vigorous crew; for without the former the latter will soon degenerate, and become as inefficient as a crew originally defective in health. The obtainment of appropriate sanitation is somewhat more difficult in Arctic ships than under ordinary circumstances, on account of the extreme cold and prolonged darkness, the ill effects of which are, in some manner, almost irremediable. It is unquestionable that ships intended for this service ought to be built with special reference to the peculiar and exceptional surroundings of Arctic voyages, but this has not hitherto been done, and the consummation of this desirable object rests with the future. Ameliorations in the structure of ships of ordinary character may be attended with great success in attaining better conditions of sanitation.

The principal points demanding attention are the heating, lighting and ventilating contrivances. The most perfect method of heating the living deck of an Arctic ship would be by steam coils fitted in appropriate fresh air adits, by means of which air of the proper temperature would be delivered below. This has not yet been realized, and the old plan of warming the air after gaining admission to the apartments prevails exclusively. This is accomplished by steam coils in the most improved vessels, such as have been built as whalers, and of this type is the Rodgers, now destined for the Arctic search expedition. The usual or exclusive method of heating, up to the time of Nares' expedition, was by stoves scattered at convenient points around the deck, and communicating with the external air by pipes, a plan which leads to the production of cold draughts, deleterious at once to health and comfort.

On board the Investigator, in 1853, what is known as Sylvester's stove was used. This consisted of an ordinary heater, placed in the hold, from which pipes were led into the various apartments to be

heated. This was reported as being a good heating apparatus, the consumption of coal being about 70 pounds per diem. On the Alert a number of stoves were distributed about the deck and were used as required, sometimes all together. A plan said to answer admirably was adopted in the Discovery, of fitting a small stove with hot-water pipes, which gave out a large warming power. The maintenance of heat below will be greatly assisted by building housings over the hatches, and covering the upper deck with snow, one or two feet deep, and, when possible, in winter quarters, by banking it against the ship. The necessity for strict economy in fuel which may arise will often place embarrassing difficulties in the way of obtaining the requisite elevation of temperature for comfortable living. It may be here remarked that it is neither necessary nor desirable to raise the temperature too high. One not exceeding 55° Fah. is perfectly compatible with health and comfort, and avoids at the same time the inconvenient condensation at higher degrees. The temperature of the Alert was maintained between 40° and 50° Fah. during the winter.

The proper illumination of Arctic ships is a difficult matter. The light gains access below through the sky-lights and bull's-eyes, which should be kept in good order. The electric light will furnish a boon of inestimable benefit during the period of darkness, but has not as yet been utilized to this purpose.

Ventilation of the lower decks must be carefully attended to, but, as may readily be appreciated from the excessively low temperature of the external atmosphere, the very frequent renewal of air heated in the ordinary way after admission is an impossibility. When it is recollected that the volume necessary for health is 3,000 cubic feet every hour, and that the space allowed each person on a ship of 800 tons is only, at most, 150 cubic feet per man, it will be seen that, to insure the former quantity, the air would have to be changed twenty times, which would be impossible, both on account of the intense cold and the draughts that would be engendered. In our temperate latitudes, it cannot be renewed more than six times in this period without the production of damaging currents. The simplest plan is to have tubular ventilators communicating externally, and supplied with proper hoods and valves, by which the quantity of air may be regulated, as the great difference between the temperature of the outside and inside, always from 80° to 100°, will induce very strong currents. The opening and closing of the doors of the hatch-housings in the ordinary routine of ship-work will aid in introducing fresh air. One of the officers of the Alert adopted the ingenious plan of connecting his room with the external atmosphere by means of a rubber tube which enabled him to control the supply. No apprehension need be felt from the bilges eliminating odorous or deleterious gases during the winter, as decomposition will be stayed by the low temperature.

A troublesome quality of the air of the living apartments of Arctic ships is dampness, proceeding from several causes; from the cutaneous exhalations of the men—and the quantity of this may be appreciated when it is remembered that an ordinary sized person eliminates from 25 to 40 ounces of moisture a day—and from the cooking opera-

tions, which, being necessarily conducted below, will supply no inconsiderable amount. These are the constant sources; and then again dampness may be engendered by neglecting to dry the clothing of working parties, or by introducing the hammocks from the low temperature of the upper deck; for the moment they are brought into the warm air of the berth-deck they speedily become wet, and hence the necessity of stowing them below whenever the thermometer falls under zero. Men returning from work should divest themselves of their clothing in the drying-room set apart for the purpose, before passing to the living deck. All exposed metal surfaces should be covered with leather, or protected with a coating of cork composition, which will effectually prevent deposits upon them. The excess of moisture dripping from the beams should be removed with cloths promptly and regularly, which will greatly contribute to both comfort and health. It may be necessary, in order to prevent wetting of the bedclothes in the bunks, to protect them from the dripping by conducting the latter away by a canvas overhang. Various special devices have been adopted by Arctic explorers to eliminate the evils of condensation. Sir John Ross caused apertures to be made in the upper deck above the galley, oven and after passages, and over these iron tanks were inverted, into which the vapor passed, became condensed, and was removed in the shape of frozen masses amounting to as much as a bushel a day. To effect the same purpose, dry chloride of lime may be used; five pounds of this, exposed on the deck, will produce a very sensible effect on the humidity of a closed apartment in three hours. Another important measure in preventing the deposition freezing, as well as to maintain the heat, is to line the sides of the living deck with a non-conducting imperishable cloth; in the Nares expedition, the fabric known as the "fearnought" was employed.

Cleanliness, both of the ship and crew, should be maintained as an important auxiliary to health. The deck should be cleansed with hot water, and quickly dried by rubbing; and great advantage will accrue by shellacking or painting the decks thoroughly, which will prevent the absorption of moisture by the wood, and at the same time render the cleansing more speedy and effectual. An apartment should be specially set apart for the ablutions of the crew, and this is best located on the lower deck, where hot water may be attainable. Bathing should be made compulsory at least once in two weeks. The clothing of the crew should be washed at stated intervals, once in ten days or two weeks, in the room appropriated for the purpose, and under no circumstances should this work be allowed on the living deck, to supply additional moisture. The bedding may be aired once a month. The men should be provided with a comfortable water-closet, which may be reached from the main deck, when this is housed over, as is always done in winter quarters. It may be constructed of light materials, projecting from the side of the ship; and to exclude draughts and cold the snow may be built quite up to the platform, forming a sort of well. When cleansing becomes necessary, the frozen mass of fœcal deposits may be removed with the snow, and a new snow wall raised as before. In this connection it may be mentioned that during sledging expeditions, the warm snow hut or tent, occupied the

night previous for sleeping quarters, will serve in the morning for latrine purposes, before resuming the march. This convenience will be fully appreciated with a temperature, perhaps, of 50° or 70° below zero.

Regulated exercise is indispensable for the maintenance of health, under all circumstances. The intense cold and other incidents of Arctic residence, especially during the long dark winter, are disponent to inaction, and hence the necessity to incite the crew to take a sufficient amount of body exercise to ward off disease. The ordinary routine of ship life will usually supply ample range for this purpose in the manifold labors demanded of mariners. In winter quarters, when shipboard work slackens, the men should be encouraged to employ their time in hunting or amusing themselves in pastimes that demand muscular energy. The cooks and servants particularly, who are not usually called upon for active labor, should be looked after and compelled to take open-air exercise. It may be stated, in general terms, that at least five or six hours daily should be occupied in this way, to maintain robust health under the conditions of Arctic life. This sort of training, so necessary to health, may be turned to practical advantage by short journeys, and the establishment of outlying depots of provisions and stores before the sledging season sets in, when the greatest drafts are made upon the physical energies. While moderate and regular exercise in labor or amusement, as indicated, conduces to health, and powerfully aids the system in warding off scurvy, it must be borne in mind that excess in this particular is equally capable of prostrating the vital powers and inviting scurvy; hence the need of great prudence and judgment not to overtax the men in long journeys, but to give them spells of rest to recruit their strength and energy. By the adoption of this plan long distances have been accomplished by persons worn out by the depressing influences of cold and disease. Whenever the exigencies of service demand extraordinary and long-sustained exertions, as frequently occur in Arctic experiences, extra rations of tea or cocoa should be issued.

As regards clothing, stout woolen underwear is recommended as possessing more advantages than garments made of other fabrics, although persons of experience in Arctic service have used with satisfaction materials of chamois and silk for this purpose. For coat and trousers, a fine-textured, thick and elastic material should be employed, and when occasion demands, these should be supplemented by the warm and durable garments of fur, such as are used by the Esquimaux.

In the sledging parties, the head can best be protected by a close-fitting woolen cap, shielding the ears, and over this the usual sealskin covering. The feet should be enveloped by woolen stockings reaching above the knee, covered with flannel or blanket wrappers, and over these boots, or preferably, skin moccasins of the Esquimaux, fitted with leggins. For the hands, woolen mittens with sealskin outer covering will serve all the purposes of convenience and comfort. Much satisfaction will be derived from the use of a wide flannel roller encircling the belly.

Not less notable in Arctic life is the character of the mental and

moral impressions for good or for evil. Cheerfulness should be cultivated by all practical means, and intellectual tastes catered to by such diversions as are readily obtainable by developing the various qualities possessed by the men composing the ship's company. Theatrical displays, orations, recitations and musical entertainments are among the most advantageous methods that can be had recourse to for the purpose of counteracting the tendency to mental despondency, so common during the season of Arctic darkness, and from which, according to Kane, the dogs themselves are not exempt.

The sanitary precautions, above all others in importance to sojourners in high latitudes, refer to food supplies. Failure in the proper quantity and quality of these is sure to impair the strength of the men and invite disease, especially when conjoined with absence of sunlight, dampness, impure air, low temperature, defective cleanliness, want of exercise and mental despondency. The diet should be as varied as the circumstances of the situation will admit, and should consist of a due proportion of animal and vegetable food. Rations of fresh meats should be served out from the regular supplies as often as four times a week. This may be done oftener with advantage when such food can be procured by the chase; any opportunity presenting for such extrinsic supplies should be embraced, with the view of economizing the ordinary provisions, and as affording preventive materials against scurvy. Such supplies are offered by the musk ox, polar bear, rabbits, ptarmigan, and the various species of water-fowl and their eggs. The seal, walrus, porpoise and whale may also be depended upon as valuable sources of fresh meat, which need no particular means of preservation as long as the temperature remains below the freezing point. Walrus meat enjoys a high reputation among the Esquimaux as an anti-scorbutic. Soups should never be substituted for meat, but may be appropriately used as adjuncts. With the animal food, regular rations of canned vegetables and fruits should be served. One of the most valuable anti-scorbutic substitutes for fresh succulent vegetables is lime juice, which should be supplied the men daily in the quantity of one ounce mixed with an equal weight of sugar. It is recommended that the issue of lime juice begin after leaving port, when the supplies of fresh vegetables have been exhausted, and that an officer should see that each man has taken the prescribed quantity. This last suggestion is important, since, if it is left to individual caprice or fancy, it may be neglected. Acid wines and spruce beer (the latter may be prepared on ship-board) are valuable agents in preventing scurvy.

It may be well to note the fact, in the event of loss or expenditure of the ordinary supplies of succulent vegetable food and anti-scorbutics, that, in the highest regions yet attained, there may be found plants possessing in some degree anti-scorbutic power, such as scurvy grass, sorrel, reindeer moss and others; but neither large nor regular supplies can be obtained. The same remark also applies to the two most easily cultivable annuals, cress and mustard, as the dearth of room and the deteriorating influence of darkness impose restrictions upon their quantity and quality.

Other reputed anti-scorbutic remedies have been furnished the ship, with the view of determining their influence, should suitable op-

portunities offer. The indispensable necessity of lime juice in the sledging parties, and the difficulties of carrying it and preparing it for use, suggested the propriety of combining the juice and pemmican in the proportion of one ounce to the pound of the latter. A large quantity of this preparation has been furnished for use in the sledging parties, and it is believed that great advantage will accrue from it. The pemmican is greatly improved in taste and flavor, and will, I believe, be more assimilable. To advoid delay and labor under similar circumstances in serving out the food, I recommend that single rations of articles, particularly tea, which should be compressed, shall be prepared before the sledges leave the ship.

An admirable article of lime juice, prepared by evaporation in shallow earthenware pans, at a temperature not exceeding 140°, has also been furnished for traveling parties. It presents the consistence of a semi-solid, and when dissolved possesses the properties of the juice unimpaired. Each pound represents a gallon of the solution of the ordinary strength, so that this quantity will supply the proper ration for eight men sixteen days; a single ration when frozen will not exceed a walnut in bulk.

The following tables show the sledge ration of the Nares expedition, and the proposed one:

BRITISH DIETARY.

Per day, per man:	*Lbs.*	*Ozs.*
Pemmican	1	0
Biscuit		14
Bacon*		4
Potato		2
Rum (fluid ounces)		2½
Chocolate		1
Sugar for chocolate		½
Tea†		½
Sugar for tea		1½
Stearine		3
Spirits of wine		1
Tobacco		½
Salt		½
Pepper		⅒
Onion or curry powder		½
Total weight	2	14.9

PROPOSED DIETARY.

Per day, per man:	*Lbs.*	*Ozs.*
Lime juice } Pemmican }	1	0
Biscuit		14
Cheese		2
Dried potato		4
Dried onions		½
Tea		1
Sugar		2
Condensed milk		1
Alcohol or petroleum‡ (fl. oz.)		4
Tobacco		½
Salt		½
Pepper		⅒
Curry powder		½
Total weight	2	13.5

It will be observed that spirits have been altogether omitted from the proposed dietary, tea having been decided by an immense majority of Arctic travelers to be more advantageous as a comforting and strengthening beverage, and upon which more work can be done. Condensed milk and egg-powder would be valuable additions to the sledge dietary.

It is believed that a close adhesion to the sanitary suggestions now made will remove any danger of the occurrence of scurvy during the service of the United States steamer Rodgers in the Arctic regions.

* Increased in some cases to 6 ounces, at request, in lieu of pemmican.

† Double allowance of tea was carried in lieu of rum.

‡ Four fluid ounces alcohol, of 75 per cent., will weigh about 3½ ounces avoirdupois.

Average load hauled by each man on leaving ship, 234½ pounds.

In this connection it will be proper to call attention to the common diseases and injuries liable to occur, that they may be speedily recognized and treated by those in charge of the sledging parties when unaccompanied by a medical officer, as must necessarily often happen.

Scurvy is one of the most redoubtable enemies of the Arctic resident. It consists of a peculiar alteration in the properties of the blood, which becomes impoverished in nourishing material by errors in diet, the most immeasurably frequent of which is the absence of succulent vegetable matter. The disease begins insidiously, the skin assuming a yellowish or earthy hue, is dry, rough and unperspiring. Dark red or brownish flecks of small size and round outline break out on various parts of the body, and later the discoloration presents large purple blotches ; the gums are tender, swollen, and of a dark color, bleed readily, and separate from the teeth ; pains in the joints of the legs, particularly in the hams, are generally complained of, and are often being confounded with rheumatism. There are muscular weakness and feeling of lassitude, ordinary exertion producing exhaustion, palpitation of the heart, and breathlessness. The mind partakes in the general debility of the body, and there is more or less disposition to despondency. In the more confirmed stages of the disease, swellings occur in the hams and other parts from the bloody and fibrinous effusions, and the bones and internal organs suffer in various degrees. These are the salient points in scurvy, and every precaution should be adopted to detect its presence at the earliest moment, especially by a periodical monthly examination after the ship is settled in winter quarters. It should be remembered that paleness of the countenance is an inseparable circumstance in those who have spent a winter in the Arctic regions. There is nothing like acclimatizing a European, for experience has shown that in every expedition the crews have been more sickly the second than the first year.

It is particularly important to examine the men selected for sledging parties, to see that they are free from scorbutic taint, inasmuch as the hard work incident to this service would inevitably disqualify a person with such tendencies in a brief period, and embarrass the party with an invalid. The proper means of preventing this disease have been already fully indicated.

The next most frequent trouble in the Arctic region is frost-bite. The men in the sledging parties are most obnoxious to this disqualification. It approaches insidiously and should be early recognized and treated to prevent funest results. The men should be frequently asked if they perceive loss of sensation in any part of their bodies, as frost-bite may occur unawares, especially on a sudden rise of temperature. If, on examining the part, it presents alteration in color to a dull waxy or purplish livid hue, with the formation of vesication or bladders, an effort should be made at once to restore the circulation slowly by friction with the hands or rubbing the part with melting snow, or plunging it into cold water for some time. When the circulation is established, dress with glycerine and cotton batting, and cover the whole with a bandage. Great care should be taken not to use stimulating applications at first, otherwise acute inflammation, followed perhaps by mortification, will result. Should these efforts

fail of success, the frost-bitten part should be dressed with carbolized cosmoline and cotton batting, and the patient made as comfortable as possible, being placed, in case the legs and feet are effected, in a sledge.

In very cold weather the face-cloth should be worn, and traveling by night adopted as far as can be done, so as to enable the men to sleep during the day, when there is less likelihood, from the higher temperature, of frost-bite. It is advised, to prevent the effects of cold upon the exposed surfaces, to rub them with unctuous applications, as cosmoline. To avoid the action of the drinking vessels upon the lips, the rims should be rubbed with the gloved hand.

The glare of snow upon the eyes produces the condition known as snow-blindness, particularly in traveling during the spring and summer months. To prevent its occurrence when the sun reappears, the men should be provided with goggles of neutral-tinted glass, and on the march or in sledging parties a dark patch may be affixed to the backs of the men, upon which, when in line, the eyes may be directed instead of upon the snow. The leading man on the drag-ropes should be changed frequently to the rear, and the eye-lids may be smeared with charcoal and grease.

Sometimes sledge labor causes exhaustion and fainting, and when a case of this sort occurs, the person should be immediately placed upon his back, with the head low, and the clothes about the neck loosened. He should be given a little warm tea, a teaspoonful of aromatic spirits of ammonia or brandy, and allowed to rest for awhile. The occurrence of perfect unconsciousness and of complete exhaustion requires the person to be at once removed to the tents, rubbed with hot flannels, and the above-mentioned stimulants given from time to time, until he recovers. He should then be dressed warmly and allowed to rest in his sleeping-bag for a few hours. To meet the emergencies of accidents and diseases of a slight character, which sometimes occur in the sledging journeys, the officers in command should be instructed by the surgeon of the vessel in the application of simple means, and suitable supplies for these purposes furnished.

Schools of Invention.—The school of invention has not yet been set off, but its germ is growing in the mechanical schools. This school will educate men and women too, for the special career of inventing new things. Why not? We already have something closely analogous in schools of design, where the pupil is trained to invent new forms or patterns, chiefly of an artistic or decorative character. The same idea will be applied to the invention of machinery, or improvements in machinery, or the adaptation of machinery to the accomplishment of special ends. Inventions usually spring from individuals striving to lighten their own labor, or from some idea entering the brain of a genius. But we shall have professional inventors who will be called in to contrive original devices, and his success will depend on the sound and practical character of his prescriptions.—*Hon. W. H. Ruffner, in Va. Ed. Journal.*

THE SYSTEMATIC STUDY OF CAUSES OF SICKNESS AND DEATH.*

By Henry B. Baker, M.D., Secretary of the State Board of Health of Michigan.

The first and most constant need of the sanitarian is accurate knowledge respecting those most common of all occurrences—sickness and deaths from disease which during years and series of years have afflicted mankind. If it seems strange that there is so great lack of knowledge on such common subjects, it must be remembered that sanitary science is one of the latest sciences, and that physicians, as such, have had no need to record or to note many of those classes of facts which form the foundation of sanitary science, though some have had occasion to contribute greatly thereto. The prevention of sickness has not been their work, and the collection of facts respecting vast numbers of cases of sickness or deaths involves labor and expense too great to be borne by individuals, unless the knowledge gained thereby is such as will advance the work in which they are engaged. It has not been apparent that sanitary science would greatly advance the art of healing or the science of therapeutics, for which other classes of facts are needed, and for which they have been diligently collected in times past. Though it is possible that the science of therapeutics might be fostered and advanced by governmental aid, there seems to be no especial need for such aid, so long as it is for the pecuniary advantage of individuals to perfect their knowledge of therapeutics in order to lead in the practice or teaching of their profession. But with sanitary science the case is very different. There never has been, and there is not now, in this State, any class of persons having such an income from any public health service by the individual citizen as will permit of any effort for the collection of those facts which are essential to the beginning of sanitary science. In the statement just made I do not forget that progress in sanitary science and improved public-health service increase the incomes of individuals generally throughout the State; this is undoubtedly true, but it does so by lessening expenditures and by increasing the ability to labor in ordinary and extraordinary pursuits. It is plain, therefore, that we cannot expect much progress in sanitary science without some such associated effort as that afforded by governments —State, national and local. The old saying that "what is everybody's business is no one's business" is particularly applicable in this connection; for though it is readily granted by every one we meet that "health is wealth," that "public health is public wealth," that an "ounce of prevention is worth a pound of cure," and that measures for the promotion of health are of vital consequence to every person; yet, except the government aids, there is now no person who can get a living by laboring for the prevention of sickness.

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*Read at the Michigan State Sanitary Convention at Battle Creek, Tuesday evening, March 29, 1881.

The chief duty of a government is to do for the safety of a people whatever they are unable, singly or by practicable voluntary associations, to do for themselves. If, as is now known to be the case, people die or suffer in great numbers from lack of knowledge which only the government can collect and diffuse among them, evidently it is one of the highest duties of the government to collect and diffuse that knowledge. That hundreds of such deaths have occurred in this State in every year is now established by good evidence.

Manifestly the first requisite for the prevention of deaths is a knowledge of the causes of the deaths. This has been recognized by intelligent legislators, and in most civilized countries "vital statistics" have for many years been regularly and systematically collected. The same is true in many of the States of this Union. The history of progress in public health movements shows that sooner or later the facts thus collected usually lead to some organized work for the prevention of deaths; thus in England, annual reports by the Registrar-General relative to vital statistics have been published since the year 1838, while reports by the Medical Officer of the Privy Council date from the year 1858, showing that after the beginning of vital statistics in England twenty years elapsed before a general Board of Health was established with a view of attempting to systematize the public health work, and make it more effective. In this country, in Massachusetts, vital statistics have been collected since 1842, and in 1869 a State Board of Health was established for the prevention of those deaths which the vital statistics showed to be most numerous. During the twenty-seven years preceding the establishment of a State Board of Health in Massachusetts, the statistics of deaths and their causes had been collected, published and studied by citizens of that State, and the evidence was conclusive that many deaths occurred from causes known to be preventable, and many more occurred from diseases believed to be preventable or avoidable. In Michigan, vital statistics have been collected since 1868, and the State Board of Health was organized in 1873—following the first inquiry for facts more speedily than in the older countries, partly because the vital statistics of Michigan soon showed that in Michigan, as in Massachusetts, there were many preventable or avoidable causes of sickness and death, and suggested a similar agency for communicating to the people the knowledge necessary to avoid or prevent deaths from such causes.

It must not be understood that the vital statistics alone are sufficient to give this important knowledge. It is said that a single bone enabled Owen to construct or reproduce the skeleton and form of an extinct species of animals, and subsequent discoveries of fossil remains confirmed his hypothesis and heralded another of the great triumphs of mind over the difficult problems with which thinking minds everywhere are engaged. But it was to Owen, the diligent student of anatomy, the close observer of the many ways in which organ is correlated with function, and function with function, the learned teacher of the fundamental laws of structure and of the history and philosophy of structural development, it was to the keen eye and mind of such a man, and not to the mere delver in the earth by whose spade the bone was brought to light, that the communicative

fossil disclosed its secrets of the past, its vision of the perfect form that should be revealed.

Thus it is not to the mere compiler of vital statistics that there is given a comprehensive view of the relations which the various classes of deaths bear to the varying conditions of soil, climate, age, occupation, nationality, social custom, individual habit and pecuniary circumstances, by which the people of a State are surrounded, and of the various means of prevention or avoidance, direct and indirect, by which it is possible to lessen the death-rate of a State, diminish its burden of sickness, crime and poverty, prolong the lives of its inhabitants and promote their comfort, welfare and happiness.

The man or the body of men who, from its vital statistics, shall construct the public health service of a State, must bring to the task the knowledge which can be acquired only at the feet of the masters of the medical sciences, and in the everyday walks of the physician, the familiarity with the manifold forms and habits of minute organic bodies, both animal and vegetable, which only the biologist has attained; the command of the inorganic substances and forces of nature which is bestowed only in the laboratory of the chemist; the knowledge of the formation and relative positions of rocks and soils, and of the relations of these to drainage and water supply, which is the reward of the geologist; the knowledge of climate and of prognostications of weather, which is the heritage of the meteorologist; the knowledge of the principles of government, and of the moral nature of man, which characterizes the lawyer; the power of commanding the attention and addressing the conscience of the people, which is the glory of the orator and the preacher—these qualifications, and more, are requisite not only to that study of vital statistics which shall discover the preventable causes of deaths, and elaborate practicable means for their removal or control, but also to that successful adaptation of means to ends by which the people shall be led to adopt and enforce practicable measures for their own protection and safety.

To vital statistics we are indebted not only for evidence showing the necessity of effort for the prevention of deaths, but such statistics are needed for constant reference in studying methods by which the deaths may be prevented. Before we can act intelligently for the prevention of deaths from any given disease or cause, we need to know the time of year at which the danger is greatest, the age at which a person is most in danger, to persons of which sex the danger is greatest, whether the danger is greater in one part of the State or country than in another, and many other facts. Vital statistics accurately collected, compiled and studied for a period sufficiently long, will give us such information.

In order to build up a sanitary science which shall serve as a basis for the prevention of sickness and deaths, it is essential, as has already been said, to have facts from more sources than one. It is not enough to know that there are more deaths from inflammation of the lungs in winter, and more from diarrhea in the summer—we need to know to what condition of the air, what condition of the body, or of its surroundings, the increase of deaths or of sickness is due, before we can consider best methods for changing or for avoiding those conditions.

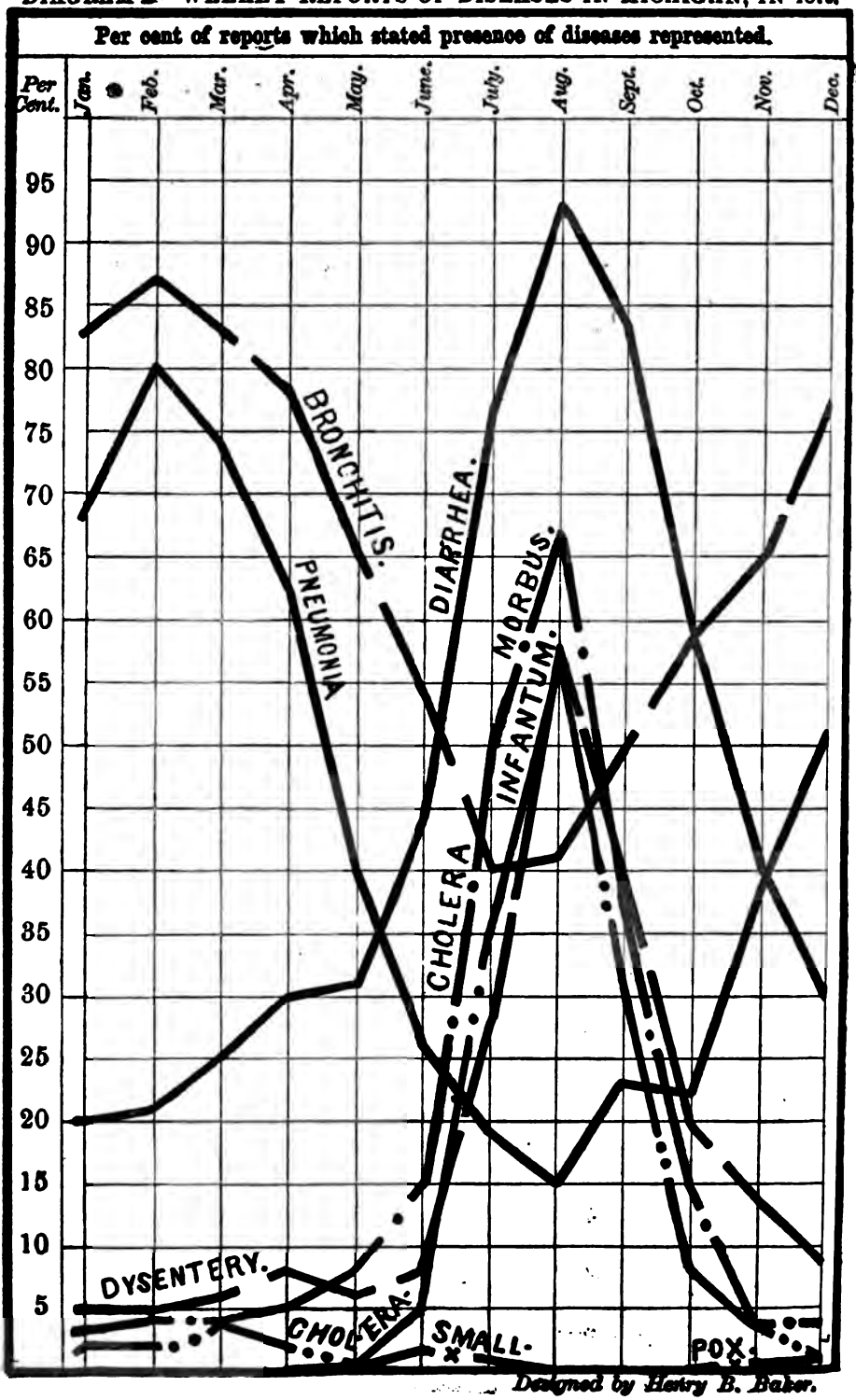
Only by long-continued watching, recording and studying the meteorological conditions, can we learn whether it is the cold, the absence of moisture, the excess of ozone, or the action of the wind, which causes so many more deaths from diseases of the air passages in winter than in summer, or whether all these are but indirectly related to the subject and the real cause—as Dr. A. N. Bell has recently suggested—filth, which can easily be removed or avoided. Yet nothing is more certain than that if systematic effort is made we can learn which of the conditions are invariably coincident with the disease, and which are only incidentally present; for notwithstanding the fact that in this State the air is generally cold, dry, windy, and contains an excess of ozone in winter, these conditions do not prevail with absolute uniformity, but sometimes one is absent and sometimes another; therefore, sooner or later every one of these and other conditions can be compared with the sickness and the deaths from each of the different diseases which now afflict us, and the truth learned as to whether these relations, severally or collectively, are those of cause and effect. If individual effort could readily achieve this, it would have been done long ago; but when the people of a State collect, compile and publish the materials essential for such studies, the work has begun, and in this State such a beginning has been made.

From the earliest times it has been known that the weather has much to do with health, but at the time the first State report on vital statistics in Michigan was published (for 1867), the compiler gave only a single table of results of meteorological observations at the Agricultural College, and regretted his inability to secure results of any other observations in the State. It is only within a few years that systematic observations have been taken for the public health service of the State, and even now no compensation is given for such important services; but philanthropic persons are now prompted to contribute their labors because the State will compile and publish, and thus render their work available for use in sanitary science.

The State Board of Health now receives contributions of meteorological records from about thirty observers in different parts of the State. Each observer makes records of observations three times each day, namely, at 7 A. M., 2 P. M. and 9 P. M., and he records the facts relative to temperature, humidity, barometric pressure, clouds, winds, ozone, rain and snow. As these observers "work for nothing and board themselves," they are not expected to add the figures in the several columns for the months; such labors, and also computations of the absolute and the relative humidity, computations to learn the actual pressure of the atmosphere, etc., are performed in the office of the State Board at Lansing, where tri-daily observations are taken. The reports of these thirty or more observers, when added, computed and averaged, are compiled in tables showing for each locality the average for each meteorological condition which is observed.

These tables may be used for purposes of study by any person. In order to prepare in the best manner possible the statements of the conditions of the air, so that they may most easily be compared with statements of the sickness or deaths from each disease, and an estimate made of the influence upon the disease by each meteorological

DIAGRAM 1—WEEKLY REPORTS OF DISEASES IN MICHIGAN, IN 1879.



condition, it has been the custom to so perfect the data that it can be represented to the eye on a diagram drawn accurately to scale. Such diagrams are as useful and as essential to the sanitarian as are the profiles which the surveyor makes for "cuts" and "fills" to the builders of railroads and streets—and their modes of construction and use are similar.

Diagrams relating to sickness and to coincident meteorological conditions were placed in the hands of the audience. The ups and downs of the irregular lines crossing the diagrams from left to right indicate, for the months or years stated at the top of the diagrams, the rise and fall of the several conditions or diseases represented. For example, by the pneumonia line in diagram here shown, it may be seen that in January, 1879, pneumonia (or inflammation of the lungs) was reported present (at some or all of the localities from which weekly reports were received) on sixty-eight per cent. of the reports received for weeks in that month; in February, by eighty per cent. of the reports; then the per cent. of cards on which it was reported fell off to fifteen per cent. in August, and rose again to fifty-one per cent. in December.

In comparing the lines relating to sickness or death with those relating to meteorological conditions it will be noticed that for some diseases the *ups* and for others the *downs* of the line representing the disease correspond with the ups of the lines representing meteorological conditions. In some cases, therefore (as in comparing the lines for the cold weather diseases in diagram 1, page 11, with the lines for temperature in the diagram on page 3), it may facilitate the comparison to imagine the lines for the meteorological condition (together with the scale on the left hand margin) reversed with reference to the top and bottom of the diagram, so as to run down in months for which they now run up, and *vice versa*. Many interesting correspondences between the rate of sickness and changes of meteorological conditions may be seen by comparing the diagrams with each other. . . . .

By means of such diagrams, it is possible to gain information which cannot be gained in any other way; for they enable a person to follow with his own eyes the rise and fall of each disease and of the temperature, ozone, pressure of atmosphere, or other meteorological condition, and to see at a glance whether the rise and fall of the disease coincide with the rise and fall of any condition of the air, or whether there is any constant coincidence such as would indicate a relation of cause and effect.

In the diagrams which I have submitted for your inspection, it is easy to see that very strongly-marked relations exist, as, for instance, between the great heat of summer and the rise in the lines representing sickness from diarrhea, cholera-morbus, cholera-infantum, etc., and between the cold, dry air in winter and spring, and the increase of sickness from inflammation of the lungs (pneumonia), etc.—diseases which nearly disappear during the warm months. In order to fix definitely the causes of sickness and deaths, the subject must be studied for periods and series of years and in detail—comparing the deaths in different parts of the State with the meteorological condition in the localities respectively; and it is essential to learn what

other conditions besides those usually observed by meteorologists have influence in causing sickness and death, as, for instance, what are the relations of swamps, etc., upon sickness from intermittent and other fevers, and what relations exist between the outbreak of communicable diseases among children at certain seasons of the year and the general opening of schools at that season of the year. For these latter purposes the State Board of Health in this State systematically collects the facts and opinions from leading physicians throughout the State, who consent to act as regular correspondents of the Board, and make replies annually to printed questions, which replies are usually published in the annual reports by the Board, and are thus placed upon record for whatever bearing upon problems in sanitary science they may at any time hereafter be found to have. Thus they are contributions to sanitary science, even though some of the statements are not quite as definite and exact as are those based upon observations made with instruments of precision.

Sanitarians must do more than utilize contributions from meteorology and from such of the other sciences; they must make original investigations, such as will result in the actual creation of knowledge never before attained; this is the grand mission of sanitary science in behalf of human welfare, and for this sanitarians must face up to nature in ways never before attempted by human beings, and must bring back from this search after revelations, portions of that eternal truth which will teach us the way of life, the way of health, and the way of happiness.

What some of the points are concerning which special investigations are needed, it may not be amiss to say a word here. With regard to small-pox, diphtheria and scarlet fever, three dreaded diseases which afflict our people, the State Board of Health, in common with the leading men of the medical profession generally throughout the State, already know enough to suppress these diseases if the people could be put in possession of the knowledge and would act upon the information, which, however, is not likely to be placed before them unless the State Board of Health can have the means for this important service. In fact, small-pox is practically suppressed in Michigan to-day, and diphtheria and scarlet fever have, in many instances in this State, been stamped out of existence in localities where they have appeared. The way to control scarlet fever or diphtheria is not, as seems to be the opinion of many intelligent people and some physicians even, to wait until the disease has taken possession of an individual and then do something to him to kill the disease, providing that the disease does not first kill him, but to keep the disease out of him from the first by keeping it away from him and him away from it; and to shut the disease into the closest possible quarters and then burn it out or smother it in its most secret lurking places. This is possible, it is practicable, and when all our people join hands to do it, it will be as easy as it is now to keep the wild bears of the forest from our homes.

With regard to diphtheria, however, there are questions which it would be of use to have decided. We know that the living germs or the poisonous elements which cause the disease are reproduced within the human body, and that in various ways, direct and indirect, the

disease is communicated from one person to another; in other words, we know that the disease is contagious; whether it is also infectious, that is, whether the invisible germs or elements of poison, whose presence in the body causes the disease, are also sometimes reproduced in substances outside the body, how long they can live (or continue efficient to cause disease) in substances outside the human body, and in what substances they can live and retain their deadly power, are questions the correct and unquestioned answers to which would be of great use in preventing the disease and in destroying its cause. It would also be of service to know what it is that makes some epidemics of diphtheria much more malignant than others; for thus we may be able to substitute mild for malignant epidemics, in some such way as is now done for small-pox.

We know that typhoid fever poison is communicated by water and by milk; but we need investigation to learn in what other ways it is communicated and how it is propagated, whether always in the body or sometimes outside the body, and in what lower animals.

There is much, too, that needs to be known concerning consumption; but on this point enough has been said in another part of this paper.

The question of the causation of intermittent fever, or fever and ague, as it is called, which we now know to cause more sickness in Michigan than any other disease, is still an unsettled question; and while much has been done toward preventing, by drainage, by cultivation of the soil and by planting of trees, it would be a great boon to the people of this State if we could know certainly what are the relations of intermittent fever to marsh land, or what it is connected with overflowed land that so greatly favors the disease, what are the conditions, both subjective and objective, under which ague is certain to arise, what is the specific poison of the disease, if such there be?

It is, I think, just as important to "know a good thing when we see it" in public health work as in any other affair; therefore it is well to bear in mind that popular books and articles are not usually "contributions to science," that papers (such, for instance, as this one) read at public meetings are not usually "contributions to sanitary science," and that really valuable "contributions to science" are not commonly easy and pleasant reading, notwithstanding their high value in advancing existing knowledge. A science is built up by the accumulation of numerous facts, which, ultimately, are grouped so as to exhibit general truths. When an individual or a government collects numerous facts and skillfully groups these facts so as to lead to new knowledge bearing upon the problems with which public health work deals, that individual or that government makes an important contribution to sanitary science. However useful it is to have essays on public health work in all its various departments, and however much good may be done because of the stimulus of such essays, which I consider essential to progress in sanitation, yet it must not be forgotten that the real solid basis of all such work must be laid in the patient, painstaking accumulation of facts (such as physicians are freely contributing), their classification, comparison, collation, provisional grouping, and final grouping so as to serve as bases of ac-

tion. Thus the recognized basis of sanitary science is vital statistics, though very much more than vital statistics is needed for an effective public health service.

Facts illustrating the nature of some of the information gained by means of vital statistics already collected in the State, may be given. It has been learned, for instance, that in this State, during a long series of years, the danger from small-pox was not as great as the danger of death from whooping-cough, there being twice as many deaths from whooping-cough as from small-pox (though the proportion of children is greater among those who die from whooping-cough). It has been learned that diseases of the lungs cause nearly one-fifth of all the deaths reported in this State, and that nearly one-half of all the deaths are attributed to diseases of the lungs, the bowels, and the brain; and it is found that a large proportion of the deaths from each of these three groups of diseases are reported to be caused by tubercular diseases, such as consumption of the lungs, consumption of the bowels, tubercular disease of the brain and coverings, etc., so that if, as now seems probable, sanitarians shall soon be able to classs consumption among the preventable diseases, and to teach people how to prevent a considerable proportion of the deaths now charged thereto, it will be one of the grandest achievements of the century, for it will add more to the financial prosperity of the people than can be easily computed, hundreds of thousands of dollars annually now being lost to the people of this State by reason of sickness and deaths from consumption; and then the anguish of human hearts beyond any power of computation or expression.

The deaths reported from consumption in Michigan will average over 1,400 annually, and there is evidence that the number reported should be much increased in order to equal the deaths which actually occur; probably 2,000 persons die in this State in every year from consumption. And yet, compared with many other States, Michigan is a very healthful State, and we are accustomed to regard these deaths as inevitable; indeed, as a rule, they seem to be, when once consumption has been contracted; and up to this time no effort has been made to prevent the spread or occurrence of this disease. It may serve to awaken enthusiasm sufficient to start some effort for its study and restriction, if we consider that consumption is now proved to be communicable from man to lower animals; that there is good evidence that the disease may be communicated from animals affected with it to man—as, for instance to susceptible children by means of milk of a tuberculous cow, to any susceptible persons by means of insufficiently cooked meat of a tuberculous animal; that there are hundreds of tuberculous cows and other animals, and that consumption is probably spread among people in unventilated rooms by breathing air which has come from the lungs of persons suffering from consumption. The evidence of this last proposition is two-fold—because from statistical and other evidence some have been convinced of the truth of it, and lately experiments have shown that dogs will contract the disease if caused to breathe air in which tuberculous matter has been atomized. Let us place these facts by the side of those others which the vital statistics give us—namely, that counting all children and grown people in this State, at least twelve per cent.

die from consumption—an average equal to every eighth person you meet in this State; and we may add that the death-rate is reported about double this among persons over 50 years of age. Thus we begin to see abundant reason for tremendous effort to learn the whole truth, and then for another effort for the prevention of this great waste of human life which is going on among us, with few to lift a voice or a hand to stop it, and there are persons even in this enlightened State who oppose any effort for improved vital statistics, who strive to cripple the resources of the public health service and to hinder the work which has for its object the prevention of sickness and deaths.

Until recently sanitarians have been obliged to accept as their best guide in the study of the causes of sickness and deaths the facts reported concerning the number, time and causes of deaths; but evidently there is much sickness which does not result in death, but which, nevertheless, it is very desirable to prevent if possible, and there are many deaths having a remote cause in sickness or other conditions quite different from those immediately preceding the death and likely to be reported as its cause; so that statistics concerning the sickness of a people are no less necessary than those concerning deaths.

Weekly reports of sickness also announce to the State Board of Health outbreaks of communicable diseases, and thus enable the Board to direct attention in various parts of the State where such diseases occur, to necessary measures for the restriction and extirpation of the disease. For such timely work by the State Board this system of reports is essential.

Yet it is only for a few years that the attempt has been made to collect statistics of sickness; and at this time I know of no such systematic effort being made elsewhere for the collection of facts respecting sickness as that by the Michigan State Board of Health. This Board receives weekly reports of the sickness under the observation of many of the leading physicians of this State, about one hundred of whom, in nearly as many different parts of the State, promptly notify the Board of the outbreak of any communicable disease, and regularly report concerning the relative prevalence of cases of each of the prominent diseases under their observation. This makes it possible for the State Board of Health to send promptly to each locality documents bearing upon the restriction of any particular disease which occurs, concerning the restriction of which the State Board has gained useful information, provided the State Board has the means to print and to distribute documents in that manner; and such distribution is desirable even if the document has been generally distributed before, because, during the outbreak of a disease, many will seek and gain information relative to that disease who will not do so at other times. But aside from keeping the State Board constantly informed concerning the health or sickness of the people, the weekly reports of sickness have great value as contributions to our exact knowledge on the subject, because the facts there reported can be systematically arranged, compiled and joined with other facts similarly arranged respecting the surroundings of people at different ages and at different seasons of the year; and knowledge may there-

by be gained which will enable the Board to tell people the conditions under which sickness from each of the prominent diseases occurs, and the conditions under which it does not occur—knowledge which must be gained if we are ever to be able to avoid or control those conditions which are now permitted to cripple and to destroy so many prematurely.

With increasing facilities for travel, it may soon be practical for human beings to gain as much control over their climatic conditions as the wild geese have so long enjoyed; but before this can be realized we must know as much as the geese do, for they seem to have gained that knowledge which mankind are so slow in gaining, and for the progress of which I am pleading, namely, such knowledge as will enable any person to know the special danger at each age and at each season of the year in each habitable portion of the earth. But I would not be content to stop with the knowledge of a wild goose, because of the expenses of travel and the many difficulties in the way of periodical movements of the population. There *are* animals who know enough to take care of themselves in warm or cold seasons of the year, particularly in climates so favorable as that in Michigan ; and I see no reason why men may not eventually learn to do as well, if only they will admit the feasibility of so doing and will devote a necessary part of their energies to this undertaking. In order to accomplish it, however, it seems to me essential that there shall be organized effort, and especially that those whom we elect to apportion the expenditures of the State in the interest of the whole people, and not for the exclusive benefit of local or class interests, shall understand the aims and purposes of the systematic study of the causes of sickness and deaths, and shall recognize those purposes as high and noble. I hope no one will infer that in this paper all the work of the State Board of Health is mentioned. In view of the many other labors by the Board, and by individual members of the Board—it is my duty to say that this paper relates only to a small part of the work of the Board, a part which less than many other parts has to do with its every-day work at the present time, such, for instance, as the dissemination of information already gained ; yet it seems to me that it is work which is absolutely essential to have done in order that future progress in sanitary science and service shall be possible ; and it cannot be done except by thorough co-operation among several classes of people. The purpose of this paper is, therefore, the hope of creating a greater interest in a subject which I deem of vital importance to our fellow men.

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Ventilate Your Closets.—Soiled under-garments or the wash clothes ought not to be put into a closet, ventilated or not ventilated. They should be placed in a large bag for the purpose, or a roomy basket, and then put in a well-aired room, at some distance from the family. Having thus excluded one of the fertile sources of bad odors in closets, the next point is to see that the closets are properly ventilated. It matters not how clean the clothing in the closet may be, if there is no ventilation that clothing will not be what it should be. Any garments after being worn for awhile will absorb more or less of the exhalations which arise from the body, and thus contain an amount of foreign—it may be hurtful—matter, which free circulation of pure air can soon remove.

YELLOW FEVER RECOGNITION AND ISOLATION.*

By Dr. R. B. S. Hargis, of Pensacola, Fla.

To reconcile the interests of the public with the prompt and honest declaration of medical opinion, in epidemic times, is an object of first importance.

Experience demonstrates that the majority of practitioners incline to the popular will, which tends to the most hopeful theories as to disease importation, until seized by panic. This is more especially the case in mercantile communities.

No question in sanitary science to-day is of more importance than that which treats of the prompt recognition and bold announcement of infection in our midst.

I cannot resist the impulse to say en passant, or rather parenthetically, that it has not been many years since, and may be so now for aught I know, when in the absence of an epidemic yellow fever in New Orleans, few physicians had the hardihood to report the existence of that disease in the city as it appeared at times in a sporadic form; and I may add that the press were under similar restraint. Wrote Dr. M. Martin Dowler, twenty-six years ago: "Commerce is king; and it is no more permitted to any physician to report cases of yellow fever with impunity in the absence of an epidemic, than to foretell and encompass the king's death." This is well appreciated in New Orleans. The laws of the counting-house are inexorable, and the unfortunate wight who takes hold of a sporadic case of yellow fever, and reports it, gets hold of the "Bottle Imp." He is soon given to understand that there is no such case in either the day-book or ledger, and he is appealed to from our most eminent physicians, who have each ten times his practice, and have not yet seen a case. If possible the disease must be ignored, but it has become quite impossible. In some seasons since 1837 the sporadic cases have become so numerous that they have been reported under different names; and among others was the very general appellation of "febris flava," on the same principle that gave the craziness of George the Third the name of "His Most Gracious Majesty's indisposition."

Painfully do I revert to the yellow fever that prevailed in Pensacola in 1873, when I had the temerity to exercise the melancholy duty of reporting to the Board of Health the first case; for this I was denounced by a prominent citizen and called a "d—d old fool, incapable of performing the duties of his profession." Of course he did me injustice—but, unfortunate man, he lived not long enough to become conscious of his error, repent and retract; he fell the third victim to the monster. Ten days later, the disease, as I predicted, became fearfully epidemic. What a commentary on what may be easily inferred! But let us return from this distasteful digression.

Scared by past events, and especially by the ruin of 1878, the tendency now is to assail the just investigator and to shrink from the world-wide publication of the earliest cases. In truth, the only danger to the health and mercantile interests of a community arises from

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* Read before American Public Health Association, New Orleans, December 10th, 1880.

mystery, which creates suspicion, and closing the eyes to realities which burst forth amid unreasoning consternation.

How to avoid this volcanic disturbance of intercourse and commerce?

To guard against a pestilence is, in fact, guarding against an enemy. Provision must be made for methodical and unceasing vigilance. It won't do to diagnose cases of yellow fever in Excelsiors at city wharves.

What would the public say, if in time of war—and epidemics imply periodical assaults—so loose a watch were maintained that torpedoes might be stealthily introduced in the heart of a city like New Orleans?

The medical profession owes it to itself in this country to render the penetration of an infected ship as difficult as the advance of a hostile frigate. The last is visible, the first is invisible.

Why shall we continue to peril the interests and reputation of Mississippi commerce by conflicts as to rice fevers and yellow fever? The public must grow more and more distrustful of doctors if these are asked to solve questions which should not arise. My remarks will not be acceptable to the believers in the domestic origin of yellow fever. They are addressed only to that school of medicine which reads history.

The exotic origin of yellow fever being accepted, it follows that ships, and ships alone, can inflict damage by introducing the plague. We are all unanimous in the belief that, as a rule, it is close contact between ships and wharves which endangers a port. It is the foul air of the vessel which is carried in the town, charged with the reproductive and transmissible poison. That vessel is commonly a sailer, and built of wood. In most cases she belongs to the collier class, or lesser mercantile craft.

The interest of this city and the quiet harmony of the entire country are endangered by what? By the extreme susceptibility of people who would deem it interference with trade to overhaul every such vessel and cleanse it of its foulness. They do not object to huge bills for disinfectants when an epidemic is raging, but the ounce of prevention is deemed unreasonable.

Let it be understood, once and for always, that the sanitarian cannot, if he would, recognize every yellow fever ship.

One single unimportant vessel from a healthy European or other port may, especially when a succession of healthy years fills our Southern ports with susceptible people, pass up the gulf from the Caribbean Sea, containing yellow fever, and its entrance, with, perhaps, a protected crew, involves the whole land in the consequences of a disastrous outbreak.

Such an accident must be rendered impossible, and then the results of ship invasions will not be dengue, rice or yellow fever.

The bilious remittents of this region will not excite suspicion of yellow fever any more than they do in the Mediterranean. The Gulf of Mexico is our Mediterranean. Its shores and waters are pure, and cannot be charged with engendering yellow fever. The waters immediately beyond it, in the equatorial calm, are the constant carriers of elements calculated to induce the most malignant and communi-

cable yellow fever. Some of my hearers may dispute this, but so long as the evidence of self-infected vessels in the tropics stands uncontradicted, it is as foolish not to guard against the dangers from ship fever as against communication with a decidedly infected port.

It is my desire on this occasion to avoid all that may not meet with almost unanimous indorsement, and therefore I shall not discuss the origin of yellow fever, but simply insist on its invisible arrival amongst us in ships. This fact established, and with a national organization to control international commerce, so far as disease importation is concerned, we should henceforth and forever be spared the humiliating exhibition of past years, and especially of the past summer.

It is not my intention to depreciate the value of diagnostic considerations. We suffer in reputation from the quick habits of the most experienced, most capable, but usually overworked practitioners.

They are not careful to a fault, as they should be, in obtaining thermometric indications, or in watching especially doubtful cases with persistent patience, neglecting for a day all other duties to the urgent one of saving a community from panic or plague.

The pulse, temperature and the characteristic symptoms of yellow fever, with coincidence of cases, should be noted, and these—not the individual opinion—should guide the Boards of Health.

Bias and imperfect perception may invalidate even physical data, but these are the surest guides we can claim.

We have to confess that an early case, or several early cases, may be overlooked, or never seen by medical men, because mild; and then the fomites surrounding sailors are always unrecognizable.

It is these difficulties, combined with the practical impossibility of tracing the poison in many an infected vessel with an apparently healthy crew, that drives us to the only course, which, as rational and prudent sanitarians, we must insist upon.

We are told of courageous commanders threatened by mutinous crews, drawing a chalk line, and, not only threatening with death, but actually shooting all who dared to step over it. Only the boldest succeed in times of real danger. Shot-gun quarantine is the brutal expedient of unfortunate lands; but it has proved serviceable, and my injunction as to isolation is that, in a sense, the analogue of shot-gun quarantine be imposed at a reasonable distance from this continent's shores.

A system of national isolation, not based on quarantine detention, but on ship cleanliness, rigorously enforced at all points, is the only effectual preventive of conflicting medical opinions or damaging interstate dissensions.

To come nearer home, the Mississippi valley is entitled to protection, and that can only be secured to it by the National Board of Health beyond the mouth of the Mississippi and in our noble gulf. Its shores are not tarnished by diseases which can be confounded with yellow fever, and they never should be touched by a possibly infected ocean vessel. It is this treatment of international shipping, demanding only very slight detention for complete purification, which can permanently benefit this country. The less the National Board of Health interferes with State Boards of Health the better. The more constant and vigilant it is against our common foreign foes the better for its reputation and for the nation at large.

THE PROGRESS OF SANITARY PROTECTION AT NEWPORT, R. I.*

By Dr. Horatio R. Storer.

A brief historical sketch of the causes that have led to the present sanitary agitation at Newport will be found of interest, for opinions the most antagonistic still prevail as to the real health conditions in this city. Upon the one side Bishop Berkeley, Dr. Waterhouse, and many subsequent resident writers have asserted, in books, magazines and newspapers, and, of course, to the satisfaction of the natives of the town, that Newport has always been, hygienically, above suspicion; while others, especially new comers, at least equally well fitted with the form to judge, have queried whether Newport's proverbial optimism has not rendered it oblivious of the actual truth in this matter, and careless regarding those inevitable dangers that an increase of population must always occasion. For, in point of fact, the population in 1840 having been but a little over eight thousand, it has now increased to nearly sixteen thousand.

That naturally and originally Newport was an exceptionally healthy place, all must acknowledge. The only real controversy narrows itself down to the question of the present day.

"The soil and rocks of Newport," wrote Dr. Wm. Gibson, of Philadelphia, twenty years ago, "have never known the presence of disease." "The city of Newport," Dr. Chas. W. Parsons, of Providence, wrote a little after, "has not been free from severe visitations of epidemic disease—scarlatina having been very fatal there in the winter of 1857–'58; typhoid dysentery in the summer and autumn of 1863; and typhus fever in the spring of 1864."†

In 1866, in a communication to the *Medical and Surgical Reporter*, of Philadelphia, Dr. Samuel W. Francis spoke of how healthy a place Newport might become, "if the drainage were better, and the city corporation could be sufficiently aroused" to its necessity.

In further corroboration of Dr. Parsons' report, and affording its full explanation, is the statement by Dr. E. S. F. Arnold, now Consulting Surgeon to the Newport Hospital. Dr. Arnold's letter is dated April 3, 1876, was written to Dr. Bowditch, of Boston, then President

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*The paper of which this is an abstract was prepared at the request of the Rhode Island State Board of Health, as conveyed by official letters from its Secretary, Dr. Charles H. Fisher, dated 21st June, 1879, and 19th March, 1881. It also in part results from the following questions that were put to me in March, 1881, by Dr. J. T. Reeve, of the State Board of Health of Wisconsin, and Chairman of the Section on State Medicine and Public Hygiene of the American Medical Association:

"1. With what measure of success has the Sanitary Protection Association of Newport met up to this time?

"2. What has been the practical result of the work done by the S. P. A.?

"*a.* Upon the sanitary condition of your city generally; and

"*b.* In inducing any action on the part of the municipal authorities?"

† Report on the Medical Topography and Epidemic Diseases of the State of Rhode Island. Transactions Am. Med. Association, Vol. XV., pp. 206 and 228; First Annual Report Rhode Island State Board of Health, 1879, p. 102.

of the Massachusetts State Board of Health, and is published in that gentleman's Centennial Discourse, entitled "Public Hygiene in America," delivered before the International Medical Congress at Philadelphia. "As a general rule," writes Dr. Arnold, "houses in the more densely populated portions of Newport have open (uncemented) stone basement walls, open stone cesspools, and open stone walls to the wells, which become more or less contaminated by surface drainage, rendered worse by the hard-pan of clay, with streaks of gravel intervening, which underlies the surface at a few feet's depth. I have a full list of the sewers before me. Certainly not more than a quarter of the sparsely inhabited parts of the town is sewered. The sewers are partly of pipe, partly of brick, partly of open stone, connected only partially with the houses on their line; and there are no means of properly flushing them. Considering that the drainage is for the most part surface drainage, the sewage and water-supply are in too close contact for health. The hygienic arrangements of Newport city are simply nil. The drainage and sewerage are deficient; and the water, as far as drawn from wells, differing only in degrees of impurity. If there is any State legislation on the subject, it is here a dead letter; and there is, as far as I can see, no sign of improvement until public opinion, through the efforts of the medical profession, shall be educated up to a perception of the requirements of a need, not only existing in cities and towns, but too often in more thinly populated localities, where thousands are apt to seek health and recreation in the summer season."

Till the present moment, and still, the whole control of the public health of Newport has been in the hands of the town's authorities—the selectmen formerly, and now the aldermen—who have been, and are, content with the methods of a former century. There are, to be sure, a "city physician" (who does merely what he is told to do by his unprofessional directors, content to refrain from making suggestions, which his experience has shown would be futile); a "health officer" (who is at present a worthy retired sea captain); and a "port physician," who exists, however, merely in name—no appointment having been made for several years, though an ordinance is still in force by which such an officer must each year be chosen.

For one single year, in 1798, nearly one hundred years ago, whether it were that Newport was then having one of its occasional experiences of epidemic disease, or (comparatively healthier than now, as it undoubtedly was) that public sentiment was for the moment clearer-sighted, a separate health board, of five, was appointed, with "power to search all houses, stores, cellars, ships and vessels," where any nuisance was suspected. But a single one of its orders seems to have been preserved upon the town records, namely, that buildings within the compact part of the city should no longer be used as slaughter-houses. In so sensible a restriction was, doubtless, found cause for the suppression of the board. There are Newporters of the present day who refer to this fact (of suppression) with pride,* and who, could they continue to have their way (a point that in the present discussion should never be forgotten), would permit no advance what-

* Newport *Mercury*, 23d April, 1881.

ever upon the town conditions of 1780, or the village conditions of 1639, for the city of 1881.

Perhaps the first really forcible blow at the present old-fashioned system, or rather want of system, the first emphatic protest against it by a medical man, was by Dr. J. Marion Sims, of New York, in 1873. As is constantly done by physicians from other parts of the country (Dr. Francis estimates that there are at least ten non-resident doctors of medicine passing the season here every year*), Dr. Sims was spending the summer of that year at Newport. He became seriously ill. The affection was traced, it was thought by his medical attendants, to the water that had been used at his table. Efforts were already making towards obtaining a public water-supply, but so great was the opposition to even so simple a sanitary necessity as this, that it has only been within the last two years (1879) that the water can fairly be said to have entered the city for practical use. Dr. Sims very reasonably thought it an outrage that the outside world should be, as it were, officially invited by the city authorities, under implication of the "perfect" healthfulness, to which reference has been made, each summer to visit Newport, and then be compelled to drink the leakings of cesspools; and he did not hesitate to say so. The following extracts are from a letter by Dr. Sims to the Newport *Daily News* in Sept., 1873:

"I spent the summer of 1860 at Newport, and was perfectly delighted with the place. I had a cottage here in 1872, and was so much pleased that I thought seriously of purchasing a house. I came again early in July last, and took from Mr. Ford a cottage in Kay Street, telling him that I wished to purchase a house if he could, during the season, find one to suit me. About the 20th of July Mr. Ford called and said he wished me to go over Mr. ——'s cottage, as its location, dimensions and price all accorded well with the views I had expressed to him. I said, 'Excuse me, Mr. Ford, I have not now the slightest idea of purchasing a house here. I have changed my mind completely. I have quite determined never to spend another summer in Newport.' You may well ask, as Mr. Ford did, why this sudden change of opinion. Health is with us a matter of the first importance. I am a water drinker. When I arrived at Newport, early in July, I drank water as freely as I did the Croton water at home. In less than forty-eight hours I was exceedingly ill; had a violent enteric attack, requiring repeated and large doses of morphine for its control, and it was all of three weeks before I was restored to my usual good health. I have not had such an attack as this in more than twenty years. I felt sure the water was to blame. I inquired, and found that the cisterns were dry, and that I had been drinking water from the well, rendered harder than usual by the long drought and consequent low state of the water in the well. I called in my neighbor and friend, Dr. S. W. Francis, and told him of my symptoms, and with what difficulty they were controlled. Without telling him what I thought about my illness, he said, 'Such attacks are now very common since the cisterns got dry. The water, beyond a doubt, is the cause of your illness.' The same views were expressed by Dr. Sands, Dr. Engs, Dr. Birckhead, Dr. Watson, and by every Newport doctor with whom I spoke on the subject. There is not the least doubt that the Newport water is the sole cause of all the diarrhœas and dysenteric complaints that exist here in such abundance during the summer, and all the doctors know it, and will tell you so. Unfortunately, I am not the only member of my family who was poisoned by the well-water. One of my sons suffered severely, and the cook and laundress were so seriously ill that their cases would have been called cholera if we had been in a cholera atmosphere. I investigated these cases carefully, and am convinced that they were not the result of cold, exposure, or imprudence in eating. They were due alone to the use of the well water. I am not in the habit of prescribing for all diseases, but it has so happened that I have seen

* National Board of Health *Bulletin*, 27th Sept., 1879, p. 113.

and prescribed for not less than thirty of my friends who have had bowel affection in Newport during the last six weeks. Their attacks were certainly due to the use of well water. And they would not have been ill at all if they had remained in New York.

"If such an amount of suffering fell incidentally under my observation, what must have been the experience of the doctors engaged in general practice here?

"There is no fact better established in medical science than that diarrhœa, dysentery, cholerine, and even cholera, typhoid fever, diphtheria and many other ailments are plainly traceable to the water we drink. In some instances they are produced or aggravated by hard water. In others by water infiltrated with sewage. This sewage question is a very grave one for Newport.

"Newporters are sleeping over a smouldering fire which will ere long break forth like a volcano.

"The cesspool is the mighty power that will, sooner or later, make itself felt. The cesspool sends abroad its noisome stench not alone in the byways and obscure lanes and alleys of this beautiful city, but it can be detected in the centre of fashion. Walk along Kay Street, near sundown of a damp day in July or August, or along Catherine Street, or Beach Road, stop at the corner near the Club House, or stop opposite any house on Bellevue Avenue that is near it, or go into any of the hotels, from the smallest to the greatest, and take a sniff of the air, and you will find it laden with cesspool effluvia. I know what I speak of, and I know full well the difference between the cesspool emanations and those from the stable or from decaying sea-weed.

"The water of Newport is doubly poisonous: 1st. Because it contains too large a percentage of solid matter; and 2d. Because it is poisoned by sewage or leakage from cesspools. I have investigated this subject with great interest and minuteness, because I am deeply interested in the welfare of this, the most charming of all seaside watering places. I have seen here cesspools full and overflowing a neighbor's lot. I have seen them emptied by digging a new one on a lower level and then covering it over. I have seen them emptied at midnight (mid-day?) by buckets and carts, sending abroad the most fearful stench and poisoning the air of residences over a large area. If Newport expects to retain her good name as a health resort, all this must be changed, and there is but one way to do it.

"I have now no personal interest in the matter, for I shall seek a summer residence elsewhere, or remain in my own beloved dirty New York, where I am sure of pure water in abundance. I know several others who intended to purchase property here, but have changed their minds after suffering from the effects of Newport hard water. I know that I speak unwelcome truths, but he is the real friend who kindly gives us timely admonition."

At about the same time, during 1873 (it was in reality a month previous to the publication of Dr. Sims' letter), Mr. Samuel Powel, of Philadelphia, now President of the Newport Sanitary Protection Association, pertinently asked, while advocating an abundant supply of pure and wholesome water, and pointing out the absolute necessity "for sewers attendant upon the distribution pipes, which must go with them everywhere, else the introduction of plenty of water can hardly benefit the general health of the city": "Has any plan or suggestion for the outlets of such sewers yet been duly considered and estimated which shall ensure the removal of the offensive matters from the windward city front, and prevent their clogging our wharves and harbor, where the water has not grown any deeper in the memory of man?" Mr. Powel also, in another letter, rebuked the city council for not attempting to check an epidemic of scarlet fever at the time prevailing, especially claiming that it was wrong to permit "children inhabiting houses where it is known to exist, to visit other children or go to school." No attention was given by the authorities to Mr. Powel's protest.

In 1876, Dr. Arnold expressed the extremely unfavorable opinion of this city, in the letter to Dr. Bowditch, that has already been given.

Not far from this period Dr. David King, now Chairman of the Rhode Island State Board of Health, endeavored, but in vain, to awake the city authorities to what was needed. I quote from a private letter from Dr. King, dated Aug. 6, 1879: "Several years ago," he says, "I made several suggestions to the common council, with regard to the sanitary police of the city. I recommended a general plan of sewerage to be adopted by the city authorities, knowing that the city could only furnish sewerage facilities by degrees. I suggested that each sewer put down should be marked on a plan, and preserved in the street commissioner's office. I particularly advised that all existing nuisances should be abated, mentioning those that arose from hog-pens, vaults of necessaries infecting neighboring lands and thus violating the rights of property, bone-boiling establishments, destroying the comfort of whole neighborhoods. I also advised a careful inspection and supervision of the cemeteries of the town, calling attention to what were known as the McGregor receiving tombs in the Island Cemetery, and recommending that the decaying bodies be taken out and buried."

Dr. Henry E. Turner, the City Physician, in equally forcible terms, and officially, denounced at about this time to the authorities their inaction in permitting the railway company to retain upon their premises a stagnant and offensive fresh-water pool, to which sickness had been directly traced. His remonstrances being wholly unheeded, Dr. Turner, though retaining his position to the present moment, seems to have refrained thereafter from giving advice to his nominal superiors. Not only had this gentleman found the city blind to the ordinary dangers depending upon foulness of water, air, and soil, but criminally negligent in the care of its poor—a point upon which every Newporter is theoretically very sensitive and very proud. "During the months of March, April, and May, 1864," says Dr. Turner in a communication to the Rhode Island Medical Society,* a portion of which (that now quoted) was republished by Dr. Parsons, of Providence, in his paper read to the American Medical Association,† "a very remarkable epidemic has developed itself at Coaster's Harbor Island, chiefly affecting the pauper inmates, although not exclusively. The community there consists of from sixty to seventy individuals, and during the period I have mentioned eleven persons have died, making about sixteen per cent. of the whole, which would be a frightful rate of mortality by itself; but when we consider that the (typhoid) dysentery of the previous autumn removed ten per cent. from the same institution, the result is absolutely astounding: it being one-quarter of a whole community dying of epidemic disease—in what has always been regarded as the healthiest locality on the face of the earth—in the lapse of little more than half a year.

"The origin of this last visitation was the bringing to the asylum of a family of colored persons, who had been living in a poor neigh-

* Typhoid Dysentery and Typhus Fever in Newport. Communications of the Rhode Island Medical Society, 1864, p. 200.

† Report, etc., already quoted. Trans. Am. Med. Assoc., XV., p. 228.

borhood, in filth, and squalor, and debauchery, without sufficient food, or clothing, or fuel, so that the woman was absolutely frost-bitten in her bed. Three of them had what was manifestly typhus fever at the time of their introduction. From that time, as if by contagion, the disease attacked a large proportion of those exposed. There was a singular absence, in the most severe cases, of grave cerebral symptoms; the depression, in fact, was disproportioned to any indications. This may possibly" (was it not probably?) "be accounted for by the circumstance that the facilities for ventilation in the house are not very good; and the disinclination of the inmates to allow any access of fresh air which they can avoid is an insuperable obstacle to the keeping open of the doors and windows. There being no hospital building, the sick are in different places, not separated from the rest, which fact undoubtedly caused much of the mortality."

In 1879, a year after the formation of the Sanitary Protection Association, Dr. S. W. Francis, in a communication to the National Board of Health upon the sanitary condition of Newport, repeated the criticism that he had made thirteen years previously, in the following language: "Nature has done all that is needful; and if man, as his buildings become more crowded, would follow out (in Newport) the sanitary regulations of modern times, disease could be cut short, and typhoid symptoms be prevented from following in the wake of many acute affections."*

In 1880, Dr. Francis H. Rankin reported to the State Board of Health that "the localities in Newport most unhealthy are in the thickly settled portions of the city. The unhealthiness is caused by bad drainage and bad water. The instances of typhoid fever and diphtheria," he continues, "which have come under my own observation, were, in each case, caused by bad drainage; and I may here state that, during the past few years, I have not had a case of typhoid fever or diphtheria where I have not found defective drainage in the house where the patient was first taken sick."†

Thus far evidence from physicians, that Newport has fallen short of the reasonable measure of healthfulness that sanitary protection demands. The testimony of laymen in a position to judge has been to the same effect.

In 1872, the then mayor, Mr. Atkinson, said in his inaugural address: "There is nothing more needed in our city than a perfect system of sewerage."

In 1874, another mayor, Mr. Slocum, said in his inaugural: "To get rid of the refuse incident to a (this) crowded population, is a subject of anxiety and serious concern." And the same gentleman, in 1880, six years later, said, upon a similar occasion: "The subject of improved drainage for the city has already occupied much of the attention of the city government; but it calls for something more than consideration. It needs that a plan should be adopted, and that action should be had under it. Not only that a plan should be adopted, but that something should be done towards the carrying out of the plan adopted."

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* National Board of Health *Bulletin*, 27th Sept., 1879, p. 112.

† Second Annual Report Rhode Island State Board of Health, 1880, p. 194.

In 1876, still another mayor, Mr. Bedlow, said in his inaugural: "The present condition of the sewerage of the city is manifestly defective." And two years later, in another inaugural, in 1878, he still more strongly expressed himself: "The persistent conversion of our harbor into a city dump, or cesspool, will surely prove, in the not very remote future, a very seductive invitation to every disease born of and nourished by poisonous effluvia."

And in 1879, yet another, Mayor Burdick, in his inaugural, stated that: "In this matter our reputation as a city is at stake, and upon a wise and prompt decision of the question rests very largely our future prosperity."

In 1881, in a letter published by Dr. Woolsey Johnson, of New York, Col. Geo. E. Waring said:

"While it is true, as a matter of fact, that Newport is a very healthy place, it is true that it, like all other similar towns, is riddled with sanitary defects, which, from the point of view of the intelligent hygienist, fully justify the most serious apprehensions. Within the past three or four years a somewhat abundant supply of water has been introduced throughout the city, and the old vaults and cesspools, which were sufficient, after a certain barbarous fashion, to secure the concealment and consequent disregard of domestic wastes, are no longer adequate to that duty; and there is no doubt that the western slope of the town, where a large proportion of the population resides, and to a less extent the eastern slope as well, is having its water-bearing strata gorged with the most offensive and dangerous form of organic impurity." * *

New York *Evening Post*, April 14th, 1881.

(*To be continued.*)

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How Ostriches Digest.—A correspondent of the *Pharmaceut. Journal*, writing from the Cape of Good Hope, where the ostrich is domesticated, states that he is perfectly certain that the digestive powers of the ostrich are very small, and only effective on certain kinds of food, and that the tenpenny nails and iron bolts upon which its digestive reputation is based are not digested at all, but simply bent and crushed by a powerful gizzard that is so thick and tough as to be with difficulty cut by a knife. The writer vouches that he has himself seen buttons and coins that have been worn to the thickness of wafers by the grinding action of this organ, and that the hardest stones assume a fine polish under its action. It would be a pity to spoil, by a paraphrase, the *naiveté* of what follows: "When a bird is in poor condition, and fed on maize, by carefully dividing the breast feathers you can hear this gizzard, or living grinding mill, at work." Presuming upon the possession of such an apparatus, ostriches eat so enormously that stoppages, which, unless relieved, will kill a bird in twenty-four hours, not unfrequently result; powerful drastics are then given, of which they are said to require a larger dose than a horse. What this bird's long-enduring stomach can bear is, however, illustrated by the following list of articles which, according to *Nature*, were found in the stomach of an ostrich that recently suffocated itself at Rome, by thrusting its neck through the bars of its cage: four large stones, eleven smaller ones, seven nails, a necktie pin, an envelope, thirteen copper coins, fourteen beads, one French frank, two small keys, a piece of a handkerchief, a silver medal of the pope, and the cross of an Italian order.

ADVICE TO MOTHERS ON THE CARE OF INFANTS.*

Translated by T. P. Corbally, A.M., M.D.

When the death-rate exceeds 25 in a thousand, it is considered very great, and unless in exceptionally unhealthy places, it is attributed to defects in the sanitary condition of the localities in which it occurs. Consider then, for a moment, that one child in every four dies before it attains the age of one year. That is, just 25 in a hundred; or, to carry the comparison one step farther, it is 250 in a thousand. Will the fond mother revolve the figures in her mind? One infant in every four dies within the year; one person over one year in every sixty-two, nearly. That is, the death-rate among infants is 250 per 1,000, and among persons over one year, about 12½ per 1,000, making the death-rate among infants under one year twenty (20) times as great as in all ages over one year.

Is this excessive mortality necessary? Is it reasonable that it should be so great if children were treated properly? Would it not be a very liberal rate to allow ten deaths among a given number of infants for one person over one year in the same number? If so, then the death-rate among infants should be reduced one-half. In the hope of contributing something towards such a reduction, the following rules and preliminary remarks are taken from instructions issued by the health authorities of the city of Brussels:

"To prevent is better than to cure; a few sanitary precautions well understood and judiciously applied, will save, in the future, much expense, a great deal of medicine, much suffering and many useless regrets.†

More than one-fourth of all the children born in Brussels die before they are a year old. The great majority of these are the victims of ignorance, of habit and of prejudice. To limit this excessive mortality, which is impoverishing both the family and society, it is necessary to popularize certain elementary principles of infantile hygiene, indispensable to mothers whose anxiety for their offspring needs to be enlightened by the teachings of science and experience.

Such is the object the Health Department of the City of Brussels has in view, in publishing the present instructions, which will be given, gratuitously, to every mother who will make the demand of the Department. (den Burgerlijken Stand.)

I. Cleanliness.—Cleanliness is a condition indispensable to health. The child should be entirely washed at least once a day, and as often as possible in a bathing-tub, or other suitable vessel; partial or local bathing or washing should be made every time the child soils or wets its diaper—and made immediately with a sponge or soft cloth moistened in warm water.

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*Stad Brussel—Gezondheidsleer der eerste Jaren.—Raadgevingen aan de Huismoders.—Brussel, 1880.

†Voorkomen is beter dan genezen; eenige wel begrepen gezondheidsvoorzorgen op eene verstandige manier toegepast, zijn voldoende om later veel geld, drogen, pijnen en nutteloos verdriet te sparen.

II. Clothing.—The child's clothes should be soft, light and warm; the swathing-clothes should never, under any pretext whatever, be tight enough to interfere with the free movements of the child; they should be fastened with safety-pins or with strings.

The navel bandage should be retained during the first month.

III. Sleeping-room.—A child will not thrive in a room deprived of fresh air and light, any more than a plant. The room in which it is kept should be large, airy and well lighted.

No gas nor odor of any kind should be permitted, and the temperature should always be moderate and uniform.

IV. The Bed.—The use of a movable cradle has many inconveniences; the rocking pacifies the child sometimes, it is true, and disposes it to sleep; but it has a most injurious effect on the brain and the stomach of the child.

The infant should have a separate bed; the many accidents that occur show how prejudicial it is to the health of the child, and even dangerous to its existence, to allow it to sleep with grown persons.

During winter the bed should be kept at a uniform temperature by means of hot water, in bottles or other vessels, judiciously applied. It should have a suitable shade of light muslin, to protect it from sudden changes of light.

V. Sleep.—The younger the child is, the more sleep it requires. In earliest infancy it passes the time in sleeping and nursing; from three months to three years it should always have some hours in the afternoon for sleep; the time for sleep should always be given with great regularity, and be properly divided.

Soothing medicines or soporifics should never be given, except on the advice of a physician; for an abuse of these things always ruins the health of the child, and sometimes causes its death.

VI. Air and Exercise.—The child should not be taken out before the tenth or fifteenth day, unless the weather is very mild.

After this the child should be taken out every day, unless the weather is extremely cold or very damp.

The clothing should vary with the temperature; woolen clothing is most useful in this climate.

The use of small carriages improperly suspended is dangerous.

The child should not be encouraged to walk too soon; it must be allowed to creep and to rise without assistance. The use of supports, chairs, baskets, etc., is useless, and often injurious to the development of the body.

VII. Feeding.—Until the child is nine months old its proper food is human milk, and especially the mother's milk; after four months, in urgent cases, panada and the like may be added, but always on the advice of a physician. Mixed food is almost always injurious to children. During the first month after birth, in default of the mother's milk, or that of a nurse, cow's milk or goat's milk, diluted with water and sweetened a little, may be given. For the next two months about one-third water may be added, and after that time the milk may be given undiluted; the milk should never be prepared until it is to be given to the child. The greatest cleanliness in regard to the vessels used, and especially the nursing-bottle, should be observed; some medical writers, for this reason, consider that method of feed-

ing as extremely injurious to the child, because want of cleanliness causes much sickness and many deaths.

From seven to ten months, in addition to the milk, the child may take a little panada, egg, or meat juice.

After this, the food may be more varied, but it should always be given at regular intervals during the day; excessive feeding, or an excess of any one kind of nourishment, is always injurious.

VIII. GENERAL ADVICE.—The physician should be informed of every change in the condition of the child, and particularly of diarrheas, which are often considered healthful during dentition, swelling in the throat and excessive discharges from the head, inflammation and discharges from within or around the ear, etc.

The various articles given to children to put into the mouth, for the purpose of quieting them, or appeasing their demands for food, cannot be too strongly condemned.

Compresses, bandages, or other articles applied for the purpose of regulating the shape of the head of the child, or for other purposes, are most absurd, and may cause great injury.

It is a grave error to think that the child cannot be vaccinated until it is some months old; vaccination is an operation entirely harmless, and preserves the child from an attack of small-pox, which it is liable to take at any time after birth. It cannot be done too early, particularly when small-pox has become epidemic."

Much of this may be considered unnecessary by some people, but it is only the physician who has a large clinical experience among children, and who has so often to antagonize the ignorance, obstinacy and willfulness of mothers, who can appreciate the necessity for much, if not all, of the directions here given. T. P. C.

"GRAN'MA AL'US DOES."

I wants to mend my wagon,
An' I has to have some nails;
Jus' two, free will be plenty,
We're going to haul our rails.
The splendidest cob fences
We're makin' ever was!
I wis' you'd help us find 'em,
Gran'ma al'us does.

My horse's name is Betsey;
She jumped and broke her head;
I put her in the stable
And fed her milk and bread.
The stable's in the parlor;
We didn't make no muss,
I wis' you'd let it stay there,
Gran'ma al'us does.

I's going to the cornfield
To ride on Charlie's plow;
I 'spect he'd like to have me—
I wants to go right now.
Oh, won't I gee up awful,
And whoa like Charlie whoas;
I wis' you wouldn't bozzer,
Gran'ma never does.

I wants some bread and butter,
I's hungry worstest kind:
But Taddie mustn't have none,
'Cause she wouldn't mind;
Put plenty sugar on it,
Tell you what, I knows
It's right to put on sugar,
Gran'ma al'us does.

MENU.

Meat-Bread.—M. Scheurer-Kestner has discovered the remarkable fact that the fermentation of bread causes the complete digestion of meat. He found that a beefsteak cut into four pieces, and mixed with flour and yeast, disappeared entirely during the process of fermentation, its nutritive principles becoming incorporated with the bread. The meat would also appear capable of preservation for an indefinite period in its new state; for loaves of meat-bread made in 1873 have been submitted to the French Academy of Sciences, where not a trace of worms or mouldiness was observable. At the beginning of his experiments, M. Scheurer-Kestner used raw meat, three parts of which, finely minced, he mixed with five parts of flour and the same quantity of yeast. Sufficient water was added to make the dough, which in due time began to ferment. After two or three hours the meat had disappeared, and the bread was baked in the ordinary manner. Thus prepared, the meat-bread had a disagreeable, sour taste, which was avoided by cooking the meat for an hour with sufficient water to afterwards moisten the flour. The meat must be carefully deprived of fat, and only have sufficient salt to bring out the flavor, as salt, by absorbing moisture from the air, would tend to spoil the bread. A part of the beef may be replaced with advantage by salt lard, which is found to improve the flavor. The proportion of meat to flour should not exceed one-half, so as to insure complete digestion. Bread made with a suitable proportion of veal is said to furnish excellent soup for the sick and wounded.

Farina Gruel as a Food for Infants is, beyond doubt, one of the very best substitutes for mother's milk that can be used. It contains the elementary principles for producing bone and muscle, and will therefore give substantial strength to those organs. Children will get fat upon arrowroot, or any other merely amylacious food, but they will still be lacking in strength of bone and muscle. Equally good is it for adults, in sickness or in convalescence, requiring a good supply of easily-digested nourishment, which is, moreover, with slight flavoring, easily made grateful to the most delicate stomach.

Farina Gruel.—Sprinkle into a farina boiler from two to three ounces of farina into a quart of boiling water. Boil from twenty to thirty minutes. Sweeten with sugar for infants. Adults often prefer seasoning with salt. Where milk is allowable, milk, or milk and water, may be preferred to water alone.

Farina Jelly, *to be moulded.*—As a general rule, when farina is boiled in milk, if it be rich and good, as country milk usually is, the inner boiler may be filled up to the lower part of the bead, and the quantity of farina for which the boiler is calculated, whether quarter pound, half pound, one pound or two pounds, may be put in through the sprinkler, while stirring the boiling milk. Or, for a pound of farina, take six quarts of good rich milk, and in that proportion for a smaller or larger quantity.

Editor's Table.

Naval and Marine Hygiene.

To the Editor of THE SANITARIAN:

In your current (July) number, in a review of Dr. Turner's recent publication on the "Hygiene of Emigrant Ships," you say the doctor was "the first to point out the dangers of excessive moisture on board ship; the first to demonstrate the utility of, and to inaugurate meteorological observations on board naval vessels; to have specially investigated the chemistry of, and the danger of emanations from bilge-water," and in other respects, to have made most important advances in naval hygiene.

That Dr. Turner has rendered great service to the navy, and thereby to our national interests, is a fact above question. "In time of peace prepare for war," and no better preparation can be made than to secure the best physical condition possible for our soldiers and seamen. The value of Dr. Turner's work cannot be over-estimated. But years ago efforts were made in the same direction, though it must be admitted with less success. The old navy greatly underrated hygiene. When you (Dr. Bell) and I were afloat, commanders of vessels, gallant fellows and good seamen as they were, thought the duties of the surgeon were limited to the use of physic and surgical instruments. Now they are better informed, and such hygiests as Turner, Wilson, Gihon, Kidder and others, can make their work appreciated in the navy and by the government. These gentlemen have this advantage over us of *ante-bellum* times in the service, that they address attentive ears, and can have their suggestions for the good of the service reduced to practice. So much was not vouchsafed to us formerly. I, myself, addressed a communication to the chief of the Bureau of Medicine and Surgery (Dr. Thomas Harris), "On the Influence of Sea-life upon Health," which was published in the *American Journal of Medical Sciences*, for October, 1849, in which I entered a protest against the perpetual washing or flooding of the lower decks, so as to keep up, or rather greatly to increase the always excessive moisture present, to the detriment of all the ship's company.

In support of my position, I made some citations from Lord Collingwood's *Memoirs*, which even at this day may bear repetition. Some of H. M. ships, as the *Venerable* and the *Ocean*, though under very unfavorable conditions in many respects, were at times without a single man on the sick list. "His flag-ship had usually 800 men, on one occasion was more than a year and a-half without going into port, during that time never had more than six, and generally but four, on the sick-list. This result was occasioned by attention *to dryness* (for he rarely permitted washing between decks), frequent ventilation of hammocks and clothes, circulation below of fresh air, etc."—*Memoirs*, p. 266.

Lord Colingwood was cruising then, it must be remembered, in the Mediterranean, and not upon Indian, African, Mexican, or other tropic seas; still the exemption among his crews from illness was most extraordinary, and the good sense of this great commander anticipated, to a great extent, the science of our day. The facts ought to be kept in perpetual remembrance.

From the sea, it is an easy transition to the sea-shore. No doubt many healthy resorts are spoiled by local errors about the house and its surroundings. I have had patients to return from large hotels on healthy shores, rather worse than better for their visits. I recently paid a flying visit to *Long Beach*, L. I., which, I believe, is indebted to Dr. Bell for its sanitary arrangements. I concluded, from a hasty examination, that this will prove to be one of the most eligible sea-shore resorts for health in America, or, perhaps, in any other country. While the pure sea air has free access to all parts of the great hotel, it seems to be thoroughly protected from any of those *recurrent* emanations which so often carry disease or death into so many hotels and homes where sanitation is at fault or is ignored.

I am, yours very truly,

RICHARD MCSHERRY, M.D.

Baltimore, July 12, 1881.

In the tribute to Dr. Turner, referred to in the foregoing letter, the editor was by no means unmindful of the suggestions and efforts of others in the same direction. The evil of excessive humidity on board ship, especially, has been common knowledge among the medical officers of the navy for an indefinite period of time. He had before him at the time of writing the review of Dr. Turner's paper, a report of an effort of his own during a cruise on the west coast of Africa, 1851–53; and the excellent chapter on Humidity, by Medical Inspector A. L. Gihon, in Vol. 1, *Medical Essays: compiled from reports to the Bureau of Medicine and Surgery, by Medical Officers of the U. S. Navy*, 1872, summarizing the ill effects of excessive moisture on board ship in general; and he is glad to have his attention called to the still older efforts of Dr. McSherry in connection with the light in which such suggestions were held. All going to show that such efforts limited to some particular ship or cruise for the time being—or conclusions from observations in general—exist on a wholly different plane from the results of the persistent efforts of Dr. Turner: official recognition and regulations for the protection of health as an important part of medical officers' duties on board ship.

The subject is one of great and growing importance in various aspects. And in connection with it, every reader's attention is invited to the leading paper of this number.

Current Work of the State Boards of Health.

Small-pox seems to be the prevailing subject of consideration.

Dr. Baker, the Secretary of the Michigan Board, particularly notices a resolution of the New Orleans Medical and Surgical Associ-

ation, in the early part of May, calling attention to the unusual prevalence of typhus fever, scarlet fever, small-pox, and other contagious diseases in the Northern and some of the Western States, and especially responds to the prevalence of small-pox in Michigan. He states, however, that—

So far, the local Boards of Health have succeeded in keeping the disease from spreading to an alarming extent. In this they have been aided by the fact that, by action of this Board in years past, thousands of people in the State were vaccinated, and thousands more have been vaccinated this spring. But, although no general outbreak of the disease has as yet occurred, yet, from the great numbers of immigrants pouring into and through this State, and the general prevalence of small-pox in foreign ports from whence these immigrants come, there is danger of such an outbreak, and he recommends some action be taken to prevent the further introduction of small-pox into the State. And to this end he sends out the following letter from Stephen Smith, M.D., Committee of the National Board of Health on the Prevention of Small-pox, and would respectfully suggest that you give this plan some thought and be prepared to take some action at the regular meeting of the Board, July 12, 1881. The letter is as follows:

DEAR DR. BAKER: The only plan by which small-pox, spread by immigrants, can be brought under effectual control, seems to me to be this, viz.: the concerted action of municipal, State and National sanitary authorities. The special functions of each might be thus stated: 1. The National Board might appoint port inspectors, who should examine every immigrant and give cards to each, with name and date of inspection; if the person is found protected, give him a white card; if unprotected, vaccinate him and give him a red card with name and date of vaccination. 2. Appoint inland inspectors to be located at the great centres, where the emigrant trains pass from one State into another, as at Buffalo, Ogdensburg, Pittsburg, Wheeling, Detroit, Cincinnati, Chicago, St. Paul, Kansas City, St. Louis. These inspectors could examine the cards, allow those holding white ones to pass, but re-examine those holding red ones, and if vaccination is not effectual, re-vaccinate. State authorities could inspect at such points as the emigrants are likely to be diverted from the train and locate in the State. 3. The municipal authorities would follow the emigrant to his home and secure general vaccination of the community.

Would your State Board be interested in taking action in this matter; or do you not suffer from immigrants? The National Board cannot properly act unless State and local Boards call for aid. If there was combined action of the State Boards, the National Board could co-operate at ports and on inter-State lines, and the whole machinery of sanitary organization could work in harmony and effectually exterminate this pestilence. Emigrants arrive at New York at the rate of 6,000 and 7,000 daily, large numbers unvaccinated, and all have been exposed to small-pox in foreign ports. It seems to me that there is a grand opportunity for the sanitary authorities of the United States to combine, each working in its sphere, and give an

example of their power to exterminate a plague which will increase for a year or more unless we make such an effort. I have detailed this plan to our health officer and Dr. Harris, and they approve. I think our State Board will ask the National Board to aid in preventing the introduction of small-pox.

(Signed) STEPHEN SMITH.

And adds: Such an inspection service as detailed need not confine its work to small-pox, but the introduction of typhus fever and other contagious diseases could be guarded against.

In Connecticut, small-pox is also the chief care of the Board. The Secretary, Dr. Chamberlain, calls attention to a good deal of excitement on the subject in several towns.

"In New Haven, a case was discovered that had been wandering about more or less, but through no neglect of the authorities. The case was promptly quarantined when discovered. As vaccination has been to some extent overlooked, at the suggestion of the Health Board a free public vaccination has been ordered, and vaccinators appointed, under direction of the health officer, Dr. C. A. Lindsley. Small-pox also reappeared in New Britain; a case died, was concealed and buried without a permit, the sexton was prosecuted and fined. This is an encouragement for the enforcement of the registration laws. There are abuses in several places that require correction. A few wholesome fines might secure a better observance of these laws, as important as any on the statute books. There have also been cases of small-pox in Bridgeport and one or two neighbouring towns; also in Harwinton, Sandy Hook, Berlin, South Windsor, Manchester, and indeed quite a number of places, including a case of varioloid in Hartford, Derby and East Hartford. In one place the disease was apparently conveyed by rags used in making paper. The disease has apparently disappeared from Meriden. Fortunately, it appears that pretty intimate contact with an infected person is necessary to convey this disease unless it becomes epidemic, when the virus would appear to have acquired the power of self-multiplication. Were this not so, the carelessness of attendants on small-pox cases in mingling directly with people would be productive of more disastrous results."

Wisconsin has recently added a new and important chapter to her health laws for the prevention of contagious diseases, which the State Board is freely circulating. Among other things it provides that:

Any person knowingly laboring under small-pox, diphtheria, scarlet fever, or other dangerous contagious, infectious or pestilential disease, who shall willfully enter a public place or a public conveyance, or shall in any way willfully subject others to danger of contracting his disease, or any person who shall knowingly and willfully take, aid in taking, or cause to be taken, a child or other irresponsible person, while laboring under any of the aforesaid diseases, into a public place or public conveyance, or shall in any way knowingly and willfully subject others to danger of contracting any of the aforesaid diseases

from such child or irresponsible person, or any person who shall knowingly and willfully subject others to danger of contracting any of the aforesaid diseases from the dead body of a person deceased thereof, or any person who shall in any way knowingly and willfully expose, aid in exposing or cause to be exposed a child or other irresponsible person, to danger of contracting any of the aforesaid diseases, shall be deemed guilty of a misdemeanor.

In California, small-pox, as a cause of deaths, appears by the reports, June 12, to be limited to one case during the two weeks reported from San Francisco, though a case was said to have occurred in Stockton towards the last of the month.

The Louisiana State Board, we regret to learn, continues in hot water, if not with the National Board, with local contests. Capt. Eads having been subjected to quarantine on his return from Vera Cruz lately, according to established regulations, severely animadverts upon regulations which admit of the free intercourse of quarantined persons on board infected vessels with the shore at Mississippi stations, while he was restrained on board a non-infected vessel off Port Eads. This is denied by the Board, and the *Regulations* quoted as authority against Capt. Eads' averments of known practices. Ship Island continues to be opposed, and supreme authority over the mouth of the Mississippi River claimed by the Board, and probably will be until the occurrence of another epidemic of yellow fever.

West Virginia State Board has been appointed as follows: Drs. L. E. Reeve, Geo. B. Moffett, Geo. H. Carpenter and C. T. Richardson; and Honorables A. R. Barbee and Isaiah Bee; Dr. Reeve has also been recently elected President of the State Medical Society.

The New York State Board is busily circulating sanitary tracts urging the enforcement of the vaccination law of the State, requiring all persons to be vaccinated before admission to the public schools, which has been in existence for twenty years, but hitherto almost wholly neglected. Various useful tracts, giving directions for the prevention of diphtheria, scarlet fever, etc., and instruction on disinfection, models of their kind, are also being profusely disseminated. And earnest efforts are being exercised by the Secretary, in furtherance of the work of Registration of Vital Statistics.

Of the proceedings of the **Sanitary Conference** of the National and State Boards at Chicago June 29–30, we have received a partial report only—of the discussion of small-pox, in particular—which we are constrained to postpone the publication of till we receive the report in full.

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending June 11, 1881. **Abbreviations:** c, consumption; a l d, acute lung diseases; s f, scarlet fever; ms, measles; w c, whooping cough; d-c, diphtheria and croup; t f, typhoid and typhus fevers; s p, small pox; y f, yellow fever; ch, cholera; dl d, diarrhœal diseases; c d, contagious diseases.

Atlanta, Ga., 37,421: 24; 12; 33.0.—dl d, 10.
Baltimore, Md., 332,190: 140; 56; 21.91.—d-c, 14.
Boston, Mass., 362,535: 139; 59; 20.0.—d-c, 14; c, 34.
Brooklyn, N. Y., 566,689: 188; 78; 16.7.—d-c, 21; s f, 13; s p, 2.
Buffalo, N. Y., 155,137 (June 4): 53; 18; 17.8.—
Cambridge, Mass., 52,800: 12; 5; 11.8.—
Camden, N. J., 41,658: 20; —; 25.8.—
Charleston, S. C., 49,990: 51; 23; 53.2.—dl d, 13; t f, 4.
Chicago, Ill., 503,304: 197; 99; 20.5.—d-c, 22; s p, 4; a l d, 18.
Cincinnati, O., 255,708: 92; 32; 18.8.—
Cleveland, O., 160,140: 50; —; 16.3.—
Dayton, O., 38,677: 9; 4; 12.1.—
Dis. Columbia, 180,000: 74; 20; 21.4.—
Evansville, Ind., 29,280: 12; 5; 21.4.—
Fall River, Mass, 49,000: 16; 8; 17.1.—
Hudson Co., N. J., 187,950: 59; 11; 16.4.—
Indianapolis, Ind., 75,074: 21; 8; 14.6.—
Kansas City, Mo., 60,000: 6; 4; 5.6.—
Lawrence, Mass., 39,178: 7; —; 9.3.—
Louisville, Ky., 123,625: 48; 18; 20.3.—
Lowell, Mass., 59,485: 21; 5; 18.4.—
Lynn, Mass., 38,284: 17; 4; 23.2.—d-c, 3.
Memphis, Tenn., 33,593: 28; 10; 44.5.—d-c, 3; dl d, 3; t f, 1.
Milwaukee, 115,578: 53; 35; 23.9.—a l d, 8; t f, 2.
Mobile, Ala., 31,205: 19; 11; 31.8.—dl d, 5.
Nashville, 43,461: 21; 11; 25.2.—
Newark, N. J., 136,400: 43; 19; 16.4.—
New Haven, Conn., 62,882: 26; 9; 21.6.—
New Orleans, La., 216,140: 170; 60; 39.2.—dl d, 57; t f, 2.
New York, 1,206,577: 633; 252; 27.3.—s p, 15; dl d, 54; d-c, 50; s f, 32.
Omaha, Neb., 30,518: 2; 1; 3.4.—
Peoria, Ill., 34,850: 7; 1; 12.5.—
Philadelphia, Pa., 846,980: 310; 105; 19.0.—s f, 14; s p, 29; t f, 6.
Pittsburg, Pa., 156,381: 70; 28; 23.4.—s f, 10; s p, 1; d-c, 3.
Portland, Me., 33,810: 17; 4; 26.2.—
Providence, R. I., 104,852: 32; 7; 15.9.—
Richmond, Va., 63,803: 27; 13; 22.1.—
Rochester, N. Y., 89,363: 35; 11; 20.4.—
San Francisco, Cal., 233,956: 87; 30; 19.4.—
Savannah, Ga., 30,681: 33; 19; 56.1.—
Springfield, Mass., 33,340: 10; 1; 15.7.—
St. Louis, Mo., 350,522: 158; 66; 23.5.—dl d, 9; a l d, 12.
Utica, N. Y., 33,913: 7; 2; 10.8.—
Wilmington, Del., 42,499: 11; 4; 13.5.—
Worcester, Mass., 58,295: 13; 6; 11.6.—

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at latest weekly returns received.

Alexandria, Egypt, 220,000, June 4, 100; 27.0.—dl d, 18; t f, 5.
Amsterdam, Holland, 326,203, June 11, 130; 20.7.—
Antwerp, Belgium, 173,643, May 21, 80; 23.2.—
Barcelona, Spain, 260,000, June 11, 127; 25.4.—dl d, 17; t f, 6.
Belfast, Ireland, 174,412, June 18, 77; 19.3.—
Berlin, Germany, 1,123,577, June 11, 669; 31.0.—dl d, 160; d-c, 31.
Birmingham, England, 400,680, June 18, 138; 17.9.—
Bombay, India, 644,405, May 24, 456; 36.8.—t f, 30; dl d, 35.
Bremen, Germany, 112,200, June 11, 60; 27.8.—
Breslau, Germany, 273,000, June 18, 153; 29.1.—
Bristol and Clifton, England, 217,185, June 18, 61; 15.4.—
Brussels, Belgium, 165,366, June 18, 75; 23.6.—
Bucharest, Roumania, 200,000, June 11, 83; 21.6.—
Buda-Pesth, Hungary, 370,370, June 11, 256; 36.0.—t f, 13; dl d, 22.
Calcutta, India, 429,535, May 14, 234; 28.4.—cholera, 43.
Christiania, Norway, 120,000, June 18, 52; 22.5.—
Copenhagen, Denmark, 235,254, June 14, 89; 19.7.—
Dresden, Saxony, 220,216, June 11, 98; 23.1.—
Dublin, Ireland, 333,401, June 18, 154; 22.9.—
Edinburgh, 233,666, June 18, 119; 26.5.—
Genoa, Italy, 180,625, Mo. of Feb., 473; 31.4.—t f, 27; d-c, 21.
Glasgow, Scotland, 601,266, June 18, 260; 22.5.—t f, 5.
Havana, Cuba, 195,437, July 2, 177; 47.9.—s p, 13; y f, 16; t f, 8.
Lisbon, Portugal, 225,152, May 28, 118; 30.1.—s p, 2.
Liverpool, England, 549,834, June 11, 255; 24.0.—s p, 3.
London, 3,707,130, June 11, 1,406; 19.1—s p, 82; s f, 36; d-c, 20.
Lyons, France, 342,815, June 11, 160; 24.3.—s p, 3.
Madras, India, 397,552, April 22, 381; 49.8.—s p, 107; "fevers," 73.
Malaga, Spain, 115,892, June 12, 114; 51.2.—t f, 4.
Montreal, Canada, 135,000: — — —
Munich, Germany, 230,000, June 11, 141; 31.9.—d-c, 9; s p, 2.
Paris, France, 1,988,806, June 16, 1,047; 27.5.—s p, 16; d-c, 52; t f, 17.
Rio de Janeiro, Brazil, 330,000, March 31, 431; 47.7.—d-c, 7.
Rome, Italy, 305,469, May 28, 150; 25.5.—
Stockholm, Sweden, 169,429, June 11, 721; 23.0.—
St. Petersb'g, Rus., 669,741, June 11, 805; 62.5.—t f, 203; s p, 7; dl d, 85.
Trieste, Austria, 128,295, June 4, 73; 26.9.—
Turin, Italy, 236,658, May 14, 124; 26.8.—
Venice, Italy, 141,615, June 11, 68; 25.0.—
Warsaw, Rus. Poland, 357,169, May 7, 200; 27.39.—t f, 11.

The healthiest cities in the United States, as measured by the above and most recent authentic reports, are in the order named: OMAHA, KANSAS CITY, LAWRENCE—MASS., UTICA, WORCESTER and CAMBRIDGE.

The most unhealthy: *Savannah, Charleston, Memphis, New Orleans, Atlanta* and *Mobile.*

The most healthy foreign cities: BRISTOL and CLIFTON, BIRMINGHAM, LONDON, BELFAST, COPENHAGEN and AMSTERDAM.

The most unhealthy cities in the world at the latest dates are: *St. Petersburg, Savannah, Charleston, Malaga, Madras* and *Havana.*

New York's Mortality for 1880 was 31,937; from consumption, 4,706; pneumonia, 2,822; bronchitis, 1,375; whole number from pulmonary diseases, 8,903, or over 27 per cent. of the total mortality. Only 31 died from small-pox. Typhus fever killed 2; typhoid fever, 241. No less than 152 perished by suicide. Of these 121 were men and only 31 women. The deaths of children under 5 years footed up 14,650. The most fatal month was June.

For the six months ending June 30, 1881, the total mortality has been 18,635, against 15,446 for the corresponding period last year, and respectively for the corresponding periods this year as against last, the deaths have been—from *zymotic diseases*, 5,566–3,993; small-pox, 291–2; scarlet fever, 1,022–206; diphtheria and croup, 1,692–819; whooping cough, 99–105; typhus fever, 111–1; typhoid fever; 141–86; malarial fever, 266–191; diarrhœal diseases under 5 years, 611–1,385. *Consumption*, 2,679–2,299; *pneumonia*, 1,981–1,653; *bronchitis*, 860–639.

Brooklyn's Mortality for the six months ending June 30, 1881, has been 6,455, against 5,728 for the corresponding period last year. From *zymotic diseases*, 1,754; diphtheria and croup, 869; scarlet fever, 341; typhoid fever, 34. *Consumption*, 867; pneumonia, 604; bronchitis, 235. During the corresponding period of last year there were 25 deaths from typhus fever; this year, none; last year there were no deaths from small-pox; this year 19.

Literature.

Messrs. Wm. Wood & Co., of New York, announce another enterprise, surpassing, if possible, all their previous ones in the way of subscription books.

The International Encyclopædia of Surgery: A Systematic Treatise on the Theory and Practice of Surgery, by Authors of Various Nations. Edited by John Ashhurst, Jr., M.D., Professor of Clinical Surgery in the University of Pennsylvania. Pioneers as Messrs. Wm. Wood & Co. have been in bringing out the very best medical talent of modern times on a plan by which the members of the medical profession could most easily avail themselves of it, this work should, and doubtless will, receive the continued support of the profession, despite all efforts at imitation on the part of other publishers. The work announced is to consist of

six volumes, covering the whole field of surgery. The following are named among the contributors:

In America: Prof. Samuel D. Gross, M.D., Prof. Alfred Stillé, M. D., Prof. D. H. Agnew, M.D., J. Marion Sims, M.D., R. W. Taylor, M.D., John A. Lidell, M.D., W. Hunt, M.D., T. G. Morton, M.D., J. H. Brinton, M.D., J. H. Packard, M.D., J. Solis-Cohen, M.D., Prof. John Ashhurst, Jr., M.D., Prof. Wm. H. Van Buren, M.D., Prof. Francis Delafield, M.D., Prof. J. Lewis Smith, M.D., Prof. E. L. Keyes, M.D., Prof. G. M. Lefferts, M.D., A. H. Buck, M.D., Prof. A. C. Post, M.D., J. H. Bill, M.D., Prof. Hunter McGuire, M.D., J. A. Grant, M.D., Prof. C. Johnston, M.D., Prof. P. S. Conner, M.D., Prof. E. Williams, M.D., Prof. E. Andrews, M.D., Prof. H. M. Lyman, M.D., Prof. J. T. Hodgen, M.D., Prof. T. Parvin, M.D., Prof. E. M. Moore, M.D., Prof. J. C. White, M.D., Surgeon-Gen. P. S. Wales, M.D., U. S. N.

In Great Britain: Thomas Bryant, Esq., F.R.C.S., Richard Barwell, Esq., F.R.C.S., W. Adams, Esq., F.R.C.S., C. Heath, Esq., F.R.C.S., W. MacCormac, Esq., F.R.C.S., J. Wood, Esq., F.R.C.S., W. Allingham, Esq., F.R.C.S., E. Bellamy, Esq., F.R.C.S., C. W. Mansell-Moullin, Esq., M.D., F.R.C.S., W. W. Cheyne, Esq., F.R.C.S., Howard Marsh, Esq., F.R.C.S., H. T. Butlin, Esq., F.R.C.S., H. Royes Bell, Esq., F.R.C.S., F. Treves, Esq., F.R.C.S., Prof. T. Anandale, F.R.C.S.E., P. H. Watson, Esq., M.D., F.R.C.S.E., Prof. G. H. B. Macleod, M.D., F.R.C.S.E., Prof. E. H. Bennett, M.D., F.R.C.S.I., A. H. Corley, Esq., M.D., F.R.C.S.I.

The announcement of *such* contributors leaves no room for remark on the character of the work. It is to be sold by subscription only, and in full sets, at from $6 to $8 per volume, depending upon the style of binding.

State Medicine and the Compulsory Registration of Disease, by J. M'Grigor Maclagan, M.D.,* is an excellent presentation of the subject, cogently answering all the arguments of any note against the proposed practice, and clearly setting forth its advantages for the promotion of the public health. Hitherto registration has been confined to infectious diseases only; but even in these very imperfectly, owing to the discrimination of the law, and the want of sufficient authority and responsibility on the part of health authorities to enforce its observance. An unqualified compulsory law for the registration and speedy report to the health authorities of all diseases by attending physicians, is the only means by which the proportional fatality of any disease, and of all diseases, may be ascer-

* A paper read at the Poor Law Conference for the Northern District, held at Gisland, Aug. 4, 1880. Pamphlet, pp. 32. London: Knight & Co.

tained; and if this were the only benefit, it would be amply sufficient to justify the means. But it would be a chief means of insuring protection from those diseases against which the law, as hitherto provided, has been only partially efficacious. Dr. Maclagan's paper is no less applicable to this country than to England, and we take pleasure in commending it to the attention of all persons interested in the promotion of the public health.

Dayton Board of Health Report for the year ending March 6, 1881, again urges sewerage and drainage upon the City Council, as it fruitlessly did the year before, as the most essential means of preventing filth diseases. Of 575 deaths from all causes, except 47 born dead, 154 are enumerated under the preventable class; but besides these, there were 97 deaths from consumption and other tubercular diseases, and 54 from acute lung diseases, adding at least half as many more deaths due to causes for which the city authorities are guilty, and justly deserve to be held responsible. Total deaths per 1,000 of population, including the still-born, 16.08. *Births*, 1,133. On an average given for thirteen years, of those born alive, 37.91 per cent. died before reaching five years of age. Of the total number of deaths above five years, about one-eighth died before reaching twenty years of age, which, added to the number of deaths under five, shows that of the whole number of births (1,133) 584 only, or a little more than one-half, have an expectancy of twenty years of age. Notwithstanding, by common measure, Dayton is a healthy city—more healthy than the average of American cities of equal population.

Retreat for the Insane, Hartford, Conn.—The fifty-seventh annual report of this institution, April, 1881, shows an aggregate of 143 patients. Admissions during the year, 114; discharges—recovered, 36; much improved, 2; improved, 15; stationary, 39; died, 23=115. Tabulated statistics are given for every year from the beginning in 1824. For the first seventeen years terminating with 1840–1, there were admitted 1,068, of whom the recoveries were 601; improved, 231; stationary, 92. For the forty subsequent years, ending with the date of this report, there were admitted 5,191; discharged: recovered, 2,196; improved, 1,389; died, 584; stationary, 757. The tables are interesting as a measure of the progress or otherwise for several periods into which they may be divided; showing, upon the whole, an improvement—though small—in the proportion of the recovered and improved.

In discussing the general subject of insanity, under the sub-head of causes and the relation of asylums to the insane, the accomplished

Physician and Superintendent, Dr. Stearns, finds occasion to quote two well-known contemporary essayists on the same subject—Nathan Allen, M.D., LL.D., ex-Commissioner in Lunacy for Massachusetts, and Dorman B. Eaton, LL.D., of New York, but makes a singular mistake in referring to the latter as the distinguished "Commissioner of Public Education," the Hon. *John* Eaton, LL.D. The point of the quotation is, that these distinguished writers appear to condemn the practice of well-appointed asylums and trained superintendents, and to hold them in some degree responsible for the increase of insanity and the continued inadequacy of asylum accommodations. Instead, Dr. Stearns very properly urges more attention to, and more definite measures in the study of preventive medicine in general, and the importance of special duties in regard to insanity, under the auspices of the National and of the State Boards of Health, by persons selected for their competency to ascertain the relation of conditions and circumstances to mental as of other diseases. That persons so appointed and co-operating in conjunction with the officers of public institutions, and particularly of educational institutions, and their bearings upon mental health, would be able to accomplish much we have no question; and it affords us pleasure to commend these suggestions of Dr. Stearns to the earnest consideration of all sanitary authorities.

The Relations of the Marine Hospital Service of the United States to Commerce, the Public, and the Medical Profession is the title of a report made by a committee of the Medical Society of California, purporting to show the inutility of the service, and why, in the judgment of the committee, it should be abolished. By accepting all the exceptions taken to the service by the committee, some of which it may be admitted are sound, there would still remain abundant reason why the service should continue to be maintained. Some abuses are shown which should be gotten rid of, but we do not reckon among them the one which seems to be held as chief in this report—in order to afford a wider field of practice to physicians in general. Limitations of those who are entitled to relief can surely be established without cutting them off with the unworthy. We agree with the committee, that "waiters, chambermaids, cabin-boys, coal-heavers, roustabouts, lightermen," and such like, employed by excursion boats, warehouses, etc., should not even be enumerated in the merchant marine service, much less provided with hospital privileges at government expense. But sick seamen are none of these; and when incapacitated for continuing in service, are of all persons least qualified to take up any other employment. As at present constituted, the Marine Hospital Service is the *right* of every disabled seaman. To take it away, and make him the uncer-

tain subject of charity to any community—for, if he has been a seaman in its best sense, there is no community of which he can claim citizenship—would be an additional hardship to the sailor's life, which we are unwilling to believe public sentiment is ready to justify.

Chicago Health Department Report for 1879–'80, pointedly illustrates the relations of filth to disease, by subdivisions of the city into special districts. The Health Commissioner, while felicitating himself on the lowness of the death-rate, as compared with other cities of 500,000 population or over, shows, notwithstanding, a mortality very nearly, if not indeed quite, twice as large as it should be, and pointedly observes: "The fact cannot be too broadly stated that the mortality of Chicago, above 14 per 1,000 of population, is entirely preventable, and all excess above this rate is limited to wards, and premises where well-understood localizing conditions of disease are present. In the one division of sanitary want, domestic neglect and filth, death took last year one inhabitant out of every thirty-eight and one-half, a yearly rate of 26 per 1,000; while in the other division only one inhabitant out of every eighty-six and one-third was taken during the same time—a yearly rate of only 12¾ per 1,000. The death-rates respectively for the two years were: 1879, 18.01; 1880, 20.79; in the two years 1,534 died of diphtheria, and 1,007 of croup; 728 of scarlet fever; 379 of typhoid fever; 180 of cerebro-spinal fever; of tubercular diseases, 1,943; of acute lung diseases, 2,089. Of the total mortality for 1879 (8,614), 4,444 were of children under five years of age; 3,160 were from zymotic diseases. For 1880, total, 10,462; 5,640 under five; 3,903, or 37.30 per cent. of the whole, from zymotic diseases. *Births* reported for 1879, 11,382; premature and still-births, 793. The departmental reports of nuisances abated, dead animals removed, etc., are tabulated, and the report throughout, chiefly statistical, but emphatic in its showing of criminal mortality.

The New York Society for the Prevention of Cruelty to Children—Sixth Annual Report, 1880—makes special note of the conviction and sentence of Mr. Cowley, of the "Shepherd's Fold," and Ancarola, the Italian *padrone*, for bringing young children to this country to be used as beggars; the rescue and return of thirteen little Hungarian boys, who were brought to this country under the pretext of being instructed in music, but in reality to be utilized in theatrical exhibitions; and the progress made in the effort to enforce the law forbidding the use of little children in theatrical exhibitions, as signal events of the year. Another specially notable incident of the year—of a different kind, as illustrating the growing interest

taken in the work of the Society—was the donation of $240.24, by twenty-one young ladies, the fourth class of Mrs. Williams' school, 26 West 39th Street. A tabular statement of the year's work is given, which shows the number of complaints received, 1,577; investigated, 1,538; advice given, 39; cases prosecuted, 194; convicted, 181; children relieved and placed in homes or institutions, 855.

The Board of Directors especially desires to call the attention of the public to the advantages of the work accomplished, and to the important announcement that the Society now is NEVER CLOSED. The upper story of the Institution is fitted up with sleeping accommodations, and all needful appliances for the proper care of the rescued, at all hours of the day *and night*. 100 East 23d Street, corner of 4th Avenue, New York.

The "Struggle for Existence," by JOHN H. POPE, M.D.—being the Presidential Annual Address before the Texas State Medical Association at its Twelfth Session, April 7, 1880—admirably presents the subject of State medicine and its claims upon the community, as well as the attention of physicians, in the extent of preventable diseases and their enormous cost to the people and the State. For Texas he estimates the number of deaths annually from preventable diseases at not less than 2,500, and constantly sick 3,750, at a cost of $1,250,000. These items are reduced as a fractional ratio of the hundreds of thousands of lives sacrificed, millions spent, and misery endured beyond the powers of computation, as a result of neglected sanitation.

The Working Women's Protective Union.—The Seventeenth Annual Report of this excellent Institution shows continued good work, eminently deserving the patronage of all persons who would encourage the most worthy seekers of honorable employment.

"The object of this corporation shall be to promote the interests of women who obtain a livelihood by employments other than household service, and especially to provide them with legal protection from the frauds and impositions of unscrupulous employers; to assist them in procuring employment, and to open to them such suitable departments of labor as are not occupied by them.—*Laws of New York*, 1868.

The services of teachers, seamstresses, dressmakers, and operatives in every branch of female labor, except household service, may be obtained through the medium of this Institution, for either city or country, *entirely free of charge*.

Inquiries and directions sent by mail to the Superintendent, at 38 Bleecker Street, New York City, will receive prompt attention.

American Society for the Prevention of Cruelty to Animals.—Fifteenth Annual Report (for 1880) continues to exhibit the energy and progress of its well-known leader and President, Mr. Henry Bergh. The number of prosecutions for cruelty during the year was 701. The number of cases in New York and Brooklyn alone, in which the agents of the Society have interfered with and prevented the further perpetration of acts of cruelty, has been 1,632; 1,519 animals, rendered unfit for other use, have been destroyed. The ambulances of the Society, for the removal of disabled horses from the streets to the veterinary hospitals, have been called out 192 times, and the derricks and slings, made expressly for rescuing horses and other animals from excavations into which they had fallen, have also been in frequent use. The Society now has 14 branches and 207 agencies in the State of New York; and in 35 States and Territories laws have been passed, and numerous societies and agencies organized in furtherance of the purpose.

The evils resulting from the continuance of inadequate measures for the prevention of cruelty in the transportation of Live Stock by railroad, are urged upon the attention of all persons interested in the purposes of the Society, and upon Congress, with the view of securing practical remedies as early as possible. Injuries, suffering and losses on shipboard are also dwelt upon, as requiring the attention of both carriers and legislators. Certain great improvements in this regard, which are now used to a limited extent, are described and earnestly recommended for general adoption.

Great satisfaction is expressed at the signal fiasco of the attempted addition of the Spanish Bull Fight to the amusements of New York. And, excepting the President's uncompromising hostility to vivisection, the report is in all respects gratifying and encouraging to all lovers of humanity—to man or beast.

Rowell & Co.'s American Newspaper Directory for 1881 contains the names, places of publication and circulation of 10,846 newspapers and periodicals, in the United States and Territories, and Canada; and an amount of business and statistical information relating to publications of all sorts, indispensable to all advertisers who would avail themselves of the best advantages. Geo. P. Rowell & Co., New York.

Publications Received.—Rhode Island State Board of Health Report; Sinclair's Beverages: Water, Tea, Coffee, Cocoa, &c.—Heywood, Manchester; Cullingworth's Sick Nursing among the Poor—Heywood, Manchester; Rumbold's Treatment of Catarrh, Part II—Rumbold & Co.; Cincinnati Health Department Report; Toledo Health Department Report; Sternberg's Experimental Septicæmia in the Rabbit.

SANITARY MISCELLANY.

Exercise should not be neglected by healthy people, even in the hottest weather, while there are few invalids who are well enough to walk about, who may not also be benefited by it. But every kind of exercise is good or bad, in proportion to the amount of co-operative action which it arouses in the organs of the body. Hence the frequent failure or actual injury of certain kinds of exercise to some people, which are beneficial to others; and why such only should be taken by invalids especially, as can be adapted to the requirements of the case in hand. As an accommodating means of exercise, we know of no agent superior to a well-regulated HEALTH LIFT apparatus, such as the Butler. It gently brings the muscles of the body into action in such a manner as to stimulate the circulation without inordinately exciting it; gives tone and strength without fatigue, and leaves the individual with an agreeable sense of refreshment of both body and mind. If the busy "down-town" working merchants and clerks, who often grudge the mid-day hour for lunch, would—those who cannot extend the time—appropriate the first half hour to exercise in the admirably well-appointed exercise rooms in the Seaman's Savings Bank Building, 76 and 78 Wall St., they would not only greatly add to the enjoyment of the lunch to follow, but infinitely lessen the proportion of inveterate dyspeptics and premature old men.

The Summit Mineral Spring Water, for those who require a refreshing, effective tonic—with neither laxative nor astringent qualities—is one of the most desirable mineral waters in the market. Sold by leading druggists.

The Feeding of Infants is a subject which should at all times engage the attention of mothers and nurses, but in hot weather especially. In this connection our attention has been called to a report of a discussion of the subject before the New Jersey Medical Society two years ago in the *Medical Record* (Vol. 13, No. 23):

"Answers to this question differed with the residence of the physician—the country and city manifesting each its peculiar needs. The mother's milk is generally conceded to be the best for the infant, but even when this is abundant, it may be disadvantageous for the individual living on it, and a substitute be necessary. Country practitioners recommend cow's milk as the best substitute, while many in cities and towns speak highly of condensed milk. Of the preparations so various and so highly commended by those who put them on the market, the Imperial Granum seems to hold the first place in the estimation of medical observers. All agree in condemning the use of nursing tubes as unclean, even with the best of care."

Ridge's Food for infants and invalids is also one of the most reliable and best approved foods extant. Both these excellent foods will be found advertised on other pages of this number.

For Good Bread: Give Hecker's Perfect Baking Powder a trial. It is made by an old reliable house and guaranteed pure.

The Garbage Burner Again.—In answer to many inquiries in regard to this excellent contrivance, our good opinion of it, expressed in June number, has been fully confirmed. We have one in our own kitchen, and find it to work satisfactorily. Like most things of any account, it requires intelligent care. The cook soon learned that the fire grate would not hold itself twice full at the same time; that if it was literally full of live coals, there was at the same time no room to dump in the garbage. The Burner should be filled as before directed, and set over one of the pot-holes at the back of the range; it may be there kept at convenience—the garbage meanwhile slowly draining and drying without the least escape of any odor. When the fire has half burned down so as to leave room for the garbage, and it being sufficiently dried, the Burner may be moved forward and dumped without any trouble whatever. If a corn shuck or any similar fragment catch over the rim of the evaporating pan, it may easily be removed by a touch with the poker, and more quickly consumed than if permitted to hang so high from the fire. Mr. Myers is now prepared to have the Burner made to any size on order, and if fitted to a large Globe stove or to a twelve or fifteen inch pot-hole of the largest size cooking galley, it is equal to burning *all* the garbage *pari passu* with its accumulation of a large hotel. An eight-inch size is suitable for family use, and wholly does away with the chief nuisance of city housekeeping. Mr. Myers also has a large assortment of other sanitary appliances, suitable for almost every requisite. Myers' Sanitary Depot, 94 Beekman Street.—For the convenience of persons wishing to utilize garbage, attention is invited to

The Eagle Garbage Barrel, manufactured by the Eagle Odorless Apparatus Co., 12 Pemberton Square, Boston. It is admirably well fitted, and air-tight—completely protecting against all escape of grease or odor.

Henry Huber, successor to Wm. S. Carr & Co., 110 Centre St., New York, manufactures and has in stock all the best varieties of water closets and fittings, cisterns, pumps, bath and basin supplies and overflows, and is at all times prepared to fill the largest orders on short notice.

At Jennings' Sanitary Depot, 7 Burling Slip, may be found on exhibition an assortment of the excellent closets, urinals, sinks, basins and patent improved articles, for which this excellent English house has been so long and so justly celebrated.

Platt's Chlorides are worthy the attention of all persons requiring an efficient disinfectant or deodorizer for the sick room, or for out-door use. They are the best preparations of their kind.

THE SANITARIAN.

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THE PROGRESS OF SANITARY PROTECTION AT NEWPORT, R. I.

By Dr. Horatio R. Storer.

[*Continued from p. 366.*]

Up to this point, verbal admissions have been presented as to the condition of things at Newport. Corroborative evidence exists in (1) the natural character and lay of the land, (2) the admitted condition, method of construction, and number of the sewers, (3) the character and position of the cesspools, in reference to wells and foundation walls of houses, (4) the natural and present level of the soil-water, and (5) the mortuary statistics that have been placed upon file by the State authorities of Rhode Island.

1. As to certain of the geological characteristics of Newport. The soil is, for the most part, a retentive clay. This clay has necessarily preserved, still unoxidized, much of the filth deposited in it for now two centuries. Where the soil is deep there is still generally a layer of gravel above the underlying rock. Many of the cesspools have been dug to this gravel, to secure their self-emptying by direct downward drainage, and to this gravel have also been dug the wells, which are consequently not fed by springs of living water, but by springs of dead water that has passed through the bodies of a whole neighborhood. Experiments now being made at the Newport Bureau of the U. S. Geological Survey, by Professor Raphael Pumpelly, of this city, for the National Board of Health, have conclusively proved that the filtration of sewage water through a great many feet, even of sand as well as of gravel, fails to free it of its poisonous organic impurities, and the germs of disease.

"From the (above) results," says Professor Pumpelly, "it appears very clearly that sand interposes absolutely no barrier between wells and the bacterial infection from cesspools, cemeteries, etc., lying, even at great distances, in the lower wet stratum of sand."*

* The Relation of Soils to Health, Supplement No. 13, National Board of Health Bulletin, April 16, 1881, p. 3.

"The natural drainage of the whole city," says Captain Cotton, of the U. S. Engineers, "is for the most part simple and direct, and generally on the shortest lines; and with no question of the pollution of the shores, its sewerage would be a plain problem. But, unfortunately the inner harbor is almost land-locked, and its principal dock-front averages a mile from the tidal current of Narragansett Bay proper. It being on the west side of the city, and southwest winds prevailing in summer, it follows that in the season when decomposition takes place quickest, floating matter is most obstructed, by unfavorable winds, from getting out of the harbor. Easton's Pond, which bounds a portion of the town on the east, has but a tortuous, irregular and intermittent outlet, completely stagnant in the dry weather of summer. South of this pond is Newport's beach, which, it is obvious, must be kept free from sewage pollution. The same necessity for keeping this beach free from pollution will, in the near future, require that the discharge of all sewage must be diverted from the cliffs between the beach and the lower end of Bellevue Avenue."*

2. As to the condition, etc., of the present no-system of sewers. "There are," says Captain Cotton, "in Newport, about 9.65 miles of sewers of various kinds. These sewers have generally been built to carry surface or rain water and the subsoil water. In some cases the overflow of cesspools has been allowed to drain into them. With the introduction of water, the demand has been general to have them used for waste water and kitchen drainage, and in some cases the water-closets have been connected with them. The sewers are of brick, or of brick covered with flagstone, and earthenware pipe. There are also about two miles of stone drains, built to drain the cellars and road beds. These, unfortunately, have been used as sewers. They are a source of danger, and should be replaced by pipe sewers as soon as possible. The sewers built with a brick invert and sides, and covered with slate flags, are not suitable for carrying sewage matter. These will, at an early day, have to be replaced by pipe sewers. Provision for ventilation has been made in but few of the sewers thus far built. They have steep gradients, are self-cleansing, except in the case of the stone drains, which have no bottoms, and two brick ones that have been connected with shallower ones, instead of continuing them with the increased depth to the outlet. These sewers, with but two exceptions, have their outlet in the harbor. The exceptions are the Narragansett Avenue sewer, discharging at the 'Forty Steps,' and the Kay Street drain or sewer, which discharges into the open gutter, and through it to Easton's Pond."†

In another communication by the same gentleman, published in the Newport *Mercury* in March, 1879, the condition of each sewer in the city is more definitely described.

"All sewers," it is stated, "that were constructed before 1872 were built simply for the draining of the streets in which they were placed, and with no reference to future enlarged use or to a system of general sewerage. They were simply stone or brick drains, and were designed to carry away the water leaching

* Report of the Committee on Streets and Highways to the City Council of Newport, 1880, p. 12.

† Loc. cit., p. 13.

through the earth in the streets. The very large part of them had no other bottom than the earth, and hence are not properly sewers. When at times these have been opened, there has often been found in them an accumulation of festering filth to the depth of even four inches. Many of these drains are still in use. The principal ones are those in Mill Street, Franklin, Pelham (below Spring), Young, the lower part of Marlboro', North Baptist (with a small part of Farewell), Bath Road (in part), Thames (from the Fort Road to Brenton Street), Long Wharf and the lower part of Kay Street. In the construction of these drains, for the most part, stone was used.

"The first constructions worthy the name of sewer are those formed of a brick bottom in a circular invert, with perpendicular brick walls, and a cover made of flagstone. These sewers are now in use in many streets, and answer their purpose very well. They are not, however, complete sewers, and are not free from objections. The streets furnished with this class of sewer are: Bull, Sherman, Touro, Mary, Green, Pelham (upper part), Narragansett Avenue (east of Bellevue Avenue), Ayrault, Levin, Fair, Pope (in part), Lee Avenue, Dixon, John, Green Lane, and Webster. The best example is the sewer in Narragansett Avenue.

"In 1873 was begun the first large and complete sewer ever built in the city. This is the one extending from Long Wharf up the Parade, through Prison Street and River Lane to Tanner Street, and along Tanner to Gould Street. This sewer is circular in form, is built of brick, and in diameter measures 54 inches at the lower end, and diminishes at proper intervals to 48, 42 and 36 inches in diameter. It is furnished with man-holes for ventilation, and thimbles for connecting with streets and houses along it. It is thus a complete sewer—capable of removing all water from rainfalls, surface drainage and sewage proper. The second complete large sewer which the city has is the Middleton Avenue sewer. This extends from Narragansett Avenue across a private estate to Middleton Avenue and along it to Bath Road. It is a circular brick sewer, measuring from 3 to 3½ feet in diameter. In connection with this sewer there is an extension across the estate of J. W. Ladd to Sunnyside Place by an old-fashioned stone drain. Connecting with this, a 15-inch pipe sewer is built in Sunnyside Place, along Beach Road to and along Cottage Street. By an exceedingly ill arrangement, there is thus emptied a 15-inch pipe sewer into a simple drain, which cannot completely remove the sewage, especially the solid portions. As a consequence, there is accumulating in the stone drain, sewage matter, liable at some future day to infect the neighborhood.

"Nearly all the smaller sewers recently constructed are of the pipe pattern, clay-pipe measuring from 8 to 15 inches being employed. These are provided with apertures for making connections, and are in every way complete and reliable sewers for single streets. These are now used in Dearborn Street, William, Prospect Hill, Church, Spring (from Bull to Levin), Barney, Gould, Bridge, Elm, Poplar, Pope (in part), Burns Court (leading to Thames) and Berkeley. In Bowery Street there is a private pipe sewer, which starts at the Ocean House, extends along the entire street and empties into the Young Street drain.

"The streets named above are all that are furnished with sewers or attempted sewers. Broadway, Thames Street, Bellevue Avenue and a part of Spring Street have no sewers. In the upper part of the city there are none north of Gould Street. On the 'Point' there are but three. The lower and thickly populated Fifth Ward has none south of Pope Street, except the Dearborn and Lee Avenue sewers. It is seen, then, that the city has simply begun the work of sewerage.

"The old sewers now in use are laid from 4 to 4½ feet below the surface of the ground, measuring to the bottom of the sewer. The Tanner Street sewer varies from 4 feet on the Parade, to the depth of 11 feet. The Middleton Avenue sewer is laid from 7 to 8 feet deep. The sewer in Gould Street is 10 feet below the surface. The depth below the surface should simply be sufficient to provide proper drainage of cellars. All the sewers are used in carrying off the surface water, and the openings into them are for the most part protected by water seals. These water seals do good service if the water does not evaporate during dry weather. The basins are also liable to become offensive through the accumulation of surface washings. The sewers are very generally connected with cellars, and also to some extent with sinks and cesspools. And here is one of the greatest evils of the present system. A large number of the drains are not trapped, for when they were built, the sewers were not used for other than comparatively pure water. But when sewage-matter proper is introduced into the sewer, the

houses connected with it by untrapped cellar drains are exposed to noisome and noxious gases. The present principal discharges of sewage are the Tanner Street, Middleton Avenue, and Franklin Street sewers. The one in Franklin Street is a simple stone drain, and yet it receives the drainage and sewage from five streets above Spring, and Spring Street as well. The connecting sewer from Bull Street to the Tanner Street sewer is an old-fashioned drain, and the sewer in Oak Street through which passes the sewage from Ayrault Street is of the same kind. Here is a serious fault. From complete pipe or fair brick sewers, sewage is discharged in three instances into drains which are unable to discharge in turn all the sewage, and so retain a portion of the solid sewage. This accumulated filth is not only dangerous to its own neighborhood, but the gases from it are liable to be driven back into the good sewers, and from them into the houses connected with them. The Franklin Street sewer empties into the harbor at Commercial Wharf, and at low tide its contents frequently give forth a horrible stench. The Young Street sewer was the occasion for complaint, until its opening was extended into the harbor below low water mark. Since then it has not offended. Cannot the Franklin sewer opening be similarly treated with a like beneficial result?

"This is Newport's sewerage. What can be done with it? And, first, we must have a care, lest in enlarging the system, we do not increase the evil. People are but beginning to use the sewers for strictly sewage purposes, and the use of an imperfect sewer for sewage is more dangerous than no sewer at all."

3 and 4. What has been stated concerning the faulty condition of almost all the sewers, has a direct bearing upon the fact that for two or three years a copious supply of aqueduct water from Easton's Pond has been pouring into all parts of the city without any increased or proper means of outlet, with the necessary effect of raising the level of soil-water in the impervious clayey soil, and thereby additionally dampening or flooding cellars, and washing cesspool material, by overflow and lateral leakage, into and through foundation walls and into even the shallower wells, which, from not reaching to the infected gravel beneath, had, until this time, to a certain extent, escaped pollution.

Beyond this, however, it has now been proved by Prof. Pumpelly, in his researches on behalf of the National Board of Health, that "whenever in an infected soil the ground-water, from any cause, rises to the surface, germs may be carried with it, and upon drying, be taken up by the atmosphere."

"Through the cellars our houses become, especially in winter," he says, "the ventilating chimneys for the surrounding ground; sucking in from all directions the air that has been nearly stagnant in the pores of the soil during the summer." "It appears probable that a dry gravel, or possibly a dry, very coarse sand, interposes no barrier to the free entrance into houses built upon them of the organisms which swarm in the ground-air around leaching cesspools, leaky drains, etc., or in the filthy made-ground of cities." "A house may be built on a thoroughly dry body of sand or gravel, and its cellar may be far above the level of the ground-water at all times, and it may yet be in danger of having the air of its rooms contaminated by the germs from leaching cesspools and vaults; for, if the drift of the leaching be toward the cellar, very wet seasons may extend the polluted moisture to the cellar walls, whence, after evaporation, the germs will pass into the atmospheric circulation of the house."*

5. As to mortuary statistics. It is often insisted upon in Newport by persons who may fear that, if the truth is told, they may lose a

*Loc. citat., pp. 18, 1 and 3.

portion of their summer clientage, that if the general-death rate at Newport is no worse than in some other moderate sized cities, this is all that one should ask. Putting aside, however, the fact that since Newport claims, and uses the claim as an advertisement of itself as a watering place, to be the healthiest place in America, it ought to show a death-rate to reasonably correspond, let us look for a moment at the official figures, contained as they are in the now twenty-seven Registration Reports of the State of Rhode Island.

In 1879, from the then two latest published reports for 1876 and 1877, I deduced certain tables, taking the neighboring city of Providence, which is somewhat more than six times as large as Newport, as the basis of comparison.* To these I now add similar tables compiled from the subsequent Registration Reports for 1878 and 1879, the most recent yet published. From them all it appears,

I. That, as is acknowledged, Newport is naturally a very healthy place, and in some respects still preserved, by its brisk sea breezes, sunny exposure, and comparative nearness to the Gulf Stream, from dangers to which other northern cities have yielded; for we find,

1. That old age is attained in Newport to a remarkable degree. The truth of this has been challenged by very high authority; but there will be no difficulty in proving the fact. In the fifth Registration Report of Rhode Island, for 1857, its compiler, Dr. Charles W. Parsons, uses the following language: "The high proportion attributed to old age in Washington, Newport and Kent counties, shows imperfect registration—implying a larger ratio of deaths of old people than can have really occurred, owing to the neglect of deaths of children, and also implying a habit of using this convenient term in many cases where some specific disease really produced the death. We think it therefore a good sign of the state of registration, and not any proof of lessening longevity or health, that this ratio of deaths attributed to old age, out of Providence city, is diminishing."†

Now in 1876 there were reported but 3.80 per cent. of the total mortality, and 3.83 of the deaths from specified causes, in Providence, as from old age; in Newport, 8.86 and 9.22, or, proportionally, more than twice as many. In 1877 there were 3.25 and 3.26 in Providence, and 10.57 and 11.90 in Newport, a still greater proportion. In 1878 there were 3.06 and 3.09 in Providence, and 10.31 and 12.04 in Newport. In 1879 there were 3.30 and 3.32 in Providence, and 6.81 and 7.54 in Newport.

To settle this question I have computed the following table, which shows the comparative death-rates in Newport and Providence *during* old age, from whatever causes. The deaths comprise, in both cities, those at eighty years and upwards. In 1876 there were 4.50 per cent. of the total deaths in Providence at over eighty years of age, in Newport there were 5.91. In 1877 there were 3.14 in Providence, in

*THE SANITARIAN, March, 1879, p. 101.

†Loc. citat., p. 81. Should we, however, compare Newport with some other cities, the result would not be so favorable. For example, for the last of the years above mentioned (1879), the general death-rate of Burlington, Vt., was 12.66, and that of St. Louis, 12.33 (National Board of Health Bulletin, March 6, 1880, p. 274); much lower in each instance than the best shown by Newport.

Newport 11.64—an enormous disproportion. In 1878 there were 3.46 in Providence; in Newport 9.86. In 1879 there were 4.59 in Providence; in Newport 8.70.

2. That a smaller proportionate number of children under ten years of age die at Newport than at Providence. In Newport, in 1876, this mortality (68) was 33 per cent. of the whole (203), and 45 per cent. in Providence; in 1877, 26 per cent. in Newport, and 44 in Providence; in 1878, 34 per cent. in Newport, and 46 in Providence; and in 1879, while there were 43 per cent. in Providence, there were but 39 per cent. in Newport.

3. That the general death-rate of Newport is smaller than that of the city of Providence, and is at times as small as that of the whole State by itself, and of the rest of the State besides Providence. In 1876 the general death-rate of Providence was 18.50 per thousand, that of the whole State, 15.90; that of the rest of the State besides Providence, 14.28, and that of Newport, 14.50. In 1877 the general death-rate of Providence was 19.25; that of the whole State, 17.20; that of the rest of the State besides Providence, 15.94, and that of Newport, 13.50. In 1878 the general death-rate of Providence was 19.89; that of the whole State, 17.20; that of the rest of the State besides Providence, 15.56; and that of Newport, 15.89. In 1879 the general death-rate of Providence was 19.32; that of the whole State, 16.20; that of the rest of the State besides Providence, 14.02, and that of Newport, 16.81.

4. This comparison with Providence may be shown in another way. In 1876 there was one death to every 54 persons in Providence, and to every 69.10 in Newport; in 1877 one to every 51.94 in Providence, and to every 74.22 in Newport; in 1878 one to every 50.62 in Providence, and to every 62.90 in Newport; in 1879 one to every 51.76 in Providence, and to every 59.46 in Newport.

5. It is proved by the State reports for many years, that Newport has a smaller proportionate mortality from consumption and similar diseases than Massachusetts, or even the northern portion of Rhode Island.

6. Mention may be made of the not unimportant fact that sunstroke is practically unknown at Newport, as it is indeed very rare in the whole State of Rhode Island.

II. But, on the other hand, we find from these same statistics that:

7. Newport has nearly the same proportionate mortality as Providence—at times it is even greater—from cholera-infantum, a disease partly the result of improper diet, partly from exposure to extreme solar heat, and partly due to filth surroundings. In 1876 the deaths from cholera-infantum in Providence were 6.64 per cent. of the total mortality, and 6.70 of the deaths from specified causes; in Newport, 10.83 and 11.29. In 1877, 6.29 and 6.32 in Providence, 4.23 and 4.76 in Newport. In 1878, 3.56 and 3.60 in Providence, 2.69 and 3.14 in Newport. In 1879, 2.91 and 2.92 in Providence, 5.68 and 6.27 in Newport—a proportion more than twice as great.

8. There is reason to believe that at Newport, from mistaken tenderness for the reputation of the place, deaths that elsewhere would be pronounced unmistakable diphtheria (with the specific patches on the fauces), are not only spoken of with caution as "laryngitis," "laryngo-

diphtheria" and "diphtheritic croup," but sometimes returned to the authorities simply as croup; the impression of course being given that there existed at the time no infectious disease, no danger in a public funeral, no unhealthy premises to be looked after by the authorities. The following statistics can hardly be explained otherwise, save upon the supposition that within the last three years, since the movement for a local Board of Health began, there has been an extraordinary development of true croup at Newport. In 1876, 3.44 per cent. of the total mortality at Newport, and 3.59 of that for specified causes, was from acknowledged diphtheria, but there was not reported a single death from croup. In 1877, 1.19, and 1.19 were from diphtheria, but there was not a death from croup. In 1878, croup had risen to 3.13 and 3.67 in Newport, while in Providence it was but 1.96 and 1.98. In the same year, 1878, 1.34 of the total mortality at Newport, and 1.57 of the deaths from specified causes, were from "quinsy"—there was none whatever at Providence. And in 1879, while in Providence "croup" caused but 2.12 of the total mortality, and 2.13 of the deaths from specified causes, in Newport it had reached the high proportion of 5.68 of the total deaths and 6.27 of the specified. At the same period there was, besides, an abundance of avowed diphtheria in Newport. In 1878 there were reported 8.96 per cent., or nearly a tenth of the total mortality, in Newport, and 10.47, or more than a tenth of the deaths from specified causes, as from true diphtheria. In 1879, while in Providence but 5.23 of all the deaths, and 5.25 of the specified, were from diphtheria, in Newport the proportions rose to 6.81 and 7.54, despite the apparent great mortality from "croup" in that year.

Under these circumstances, it would doubtless be but just to capitalize the two sets of figures. If we do so, we find that while in 1876 and 1877 there were proportionally fewer deaths from diphtheria and croup reported in Newport than in Providence, in 1878 the deaths from these diseases were 14.27 of the total mortality in Providence, and 14.39 of the deaths from specified causes; and in Newport, from these diseases and so-called "quinsy," 13.45 and 15.70, the proportions being very nearly the same in the two cities; and in 1879, with 7.35 and 7.38 per cent. from diphtheria and croup in Providence, the mortality in Newport had risen to a very much greater proportion, namely, to 12.50 per cent. of the total, and 13.80 of the specified mortality. It will be recollected that almost one-tenth of the whole number of deaths in Newport in 1878 are acknowledged to have been from true diphtheria. It is now evident that in 1879 its mortality had become still greater, if not, indeed, one-eighth of the total number of deaths.

9. Scarlet fever, a disease fostered by filth, and dependent for its transmission upon disregard of sanitary laws, sometimes occasions, even when not epidemic in either city, a greater proportionate mortality in Newport than in Providence. Thus in 1876, 2.46 per cent. of the total deaths, and 2.57 of those specified, in Newport, were from scarlet fever; in Providence but 1.87 and 1.89. In 1877, .61 and .62 in Providence, and 1.58 and 1.78, or proportionally nearly three times as many, in Newport.

10. Typhoid fever, as purely a filth disease, and only spread through

filth exposure, shows a similar result. In 1876 the proportion of deaths from typhoid in Providence to the total mortality was 1.76, and to the specified deaths 1.79; in Newport, 3.94 and 4.11, or proportionally more than double. In 1877 in Providence 2.16 and 2.18, and in Newport 2.11 and 2.38; still an equal proportion in Newport.

If, now, we take a more general view, we find the points that have been made even more strikingly corroborated. In 1876 there were a total of 203 deaths in Newport, of which in 195 the causes were specified; 48 of these, or one-quarter of the whole, and also nearly one-quarter (24.62) of all whose causes were specified, were from zymotic or preventable, or what are technically called "filth" diseases. In 1877 the total deaths were 189, those with specified causes 168, and those from zymotic diseases 29; the proportions being that the latter were nearly one-sixth of the whole, and 17.26 of those from known causes. In 1878 the total deaths were 223, those with specified causes 191, and those from zymotic diseases 39; the proportions being that the latter were more than one-sixth of the whole, and 20.42 of those from known causes. In 1879 the total deaths were 264, those with specified causes 239, and those from zymotic diseases 61; the proportions being that the latter were nearly one-quarter of the whole, and more than one-quarter (25.52) of all whose causes were known.

What more startling evidence than this of all that sanitarians have asserted concerning Newport can be asked for? What more convincing proof could be adduced?

(*To be continued.*)

The Value of Revaccination is well illustrated by a report recently furnished, at the instance of the Local Government Board of London. This report relates to an average number of 10,504 persons permanently employed in the postal service, all of whom have been required to undergo revaccination on admission to the service, unless that operation had been performed within seven years previously. Among these persons during the ten years, 1870–1879, there has not been a single fatal case of small-pox, and in only ten instances have there been non-fatal attacks, all of which were of a very slight character. In the Telegraph Department, where the enforcement of revaccination has not been carried out with quite the same completeness, 12 cases have occurred in the same period among a staff averaging 1,458 in number. Eight of these attacks were of persons who had not been revaccinated, and one proved fatal. The remaining four were of revaccinated persons, who all perfectly recovered without pitting. This experience, like that of the nurses at the small-pox hospitals, seems to show that revaccinated persons enjoy absolute immunity from severe attacks of small-pox, and that their risk of catching that disease at all, even in its most modified form, is infinitesimal.

THE RESULTS OF ATTEMPTING TO CHECK THE SPREAD OF SMALL-POX IN CHICAGO.*

By Dr. O. C. De Wolf, of Chicago.

One hundred and forty-seven thousand immigrants have been received at and distributed from Chicago during the year 1880. Unlike ports of entry on the seaboard, where these strangers may be quarantined and provided for until ready to forward, Chicago receives them on their transit to the Northwest from four different lines of railroad, and permits them to disperse themselves about the city at their pleasure. The passage from European ports is now so rapidly made that the individual may contract small-pox two days prior to taking ship at Bremen, for instance, and find himself in Chicago before the eruption has arrived. In this manner small-pox has been brought to this city (Chicago) six times during the past year. Again, Chicago has received as a permanent accession to her population 30,000 souls each year since 1877.

The cosmopolitan multitude of immigrants and citizens received each year environs this city with a peculiar peril, when exposed to incursions of small-pox, and should be remembered in a review of the subject as applied to Chicago.

As a basis for the discussion of the subject, and a statement of the views I entertain and methods employed in this city for preventing the spread of small-pox, I offer the following propositions, which may form a conclusion to this note:

1. All physicians and householders should be required by law to report, on first knowledge, to the proper authorities, all cases or suspected cases of small-pox.

2. When from local condition or general prevalence of the disease in locations accessible to our population, there is reason to fear a troublesome invasion of the disease, *every* case discovered before the suppurative stage should be removed to the hospital, and every house in which a patient is found at a period too late for removal—*i. e.*, after the suppurative period has commenced, should be continuously guarded by a police officer until the patient is dead or removed from surveillance.

3. The following precautions should be taken in regard to disinfection:

(*a*) The body, immediately after death, should be wrapped in a sheet saturated with 50 per cent. solution of carbolic acid, closely coffined, and buried under police direction.

(*b*) The house, furniture and clothing from which the dead or the living have been removed, should be fumigated with sulphuric acid gas or chlorine gas, and remain under police observation for eight hours.

(*c*) The convalescent, before leaving hospital or domicile, should receive several warm disinfecting baths, paying special attention to

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* Read before American Public Health Association, New Orleans, December 9th, 1880.

the hair, and if from the hospital all clothing should be perfectly fresh or fumigated.

4. When general infection is feared, general vaccination should be compulsory and vigorously executed, if necessary by police power.

I am of the opinion that Chicago has escaped an epidemic of small-pox twice during the past four years by a faithful execution, to the utmost detail, of the above programme, although in one instance (1878) I received more censure from a portion of the press and from some citizens than from any sanitary service I ever performed, one daily paper counseling the citizens to "shoot down the health officers like dogs if private domiciles were invaded."

The result, however, justified the means, and compliments all around terminated the labor. There have been but three instances during the past four years, so far as I am informed, of failure to report cases of small-pox. On each occasion the attending physician was brought before the courts and fined $50.

On receipt of notice of small-pox, a medical officer is immediately dispatched to investigate the case, and if in his judgment removal is proper, he telephones the fact to the central office, and the ambulance is hastened to the location. The isolation of the afflicted by removal to the hospital was in some cases strenuously opposed by the patient or family, who insisted that under our form of constitutional government such removal, when compulsory, was a violation of the law, and inconsistent with the preservation of personal liberty.

In 1877 the following ordinance was passed by Corporation Counsel (now Judge) Anthony, and immediately adopted by the City Council:

By unanimous consent, Alderman Throop presented an ordinance amending section 4 of chapter 17, R. O., entitled "Health Department," and moved its passage.

The motion prevailed, and the ordinance was passed by yeas and nays as follows:

Yeas—Pearsons, McAuley, Ballard, Rosenberg, Aldrich, Thompson, Gilbert, Stewart, Sommer, Cullerton, Tarnow, Beidler, Throop, McCrea, Rawleigh, Cleveland, Wheeler, Baumgarten, Waldo, Lengacher, Linsenbarth, Boser, Kirk—23.

Nays—None.

The following is the ordinance as passed:

Be it ordained by the City Council of the city of Chicago—

SECTION 1.—Section 4, chapter 17 of the Revised Ordinances of the city of Chicago, compilation of 1873, is hereby amended by the addition of the following proviso:

Provided, That in case such health officer be resisted or opposed in making such removal of any person so affected with an infectious or pestilential disease, the person or persons so opposing or resisting such health officer shall be fined therefor not less than $25 nor more than $200, and such health officer, whenever it shall become necessary in order to make the removal of any person so affected with any infectious or pestilential disease, as provided for in the section to which this is an amendment, is hereby authorized, empowered and commanded to break open the door or doors of any house in which such sick person is, and to use such force as may be necessary to

effect such removal. And the police department of the city shall, when requested, furnish the health officer with all necessary assistance.

SECTION 2.—This ordinance shall be in force from and after its passage and due publication.

In my opinion, the power delegated to the municipal authorities by this ordinance is beneficent and salutary. The propriety in all cases, and the absolute necessity in many, of the isolation secured by hospital is too well understood by this body to require discussion. On several occasions it has been necessary to call upon the police force for aid in removing a patient, but in all cases removal was made when attempted. I have sought to overcome this opposition by supplying such accommodation at the hospital as would command the attention and approval of all persons admitted, and with such success that during the past year all citizens afflicted with this loathsome disease have demanded as a right to be admitted to the hospital.

To this date (November 15) there have been reported in the city during the year 191 cases of small-pox; 182 have been removed to hospital and nine have been quarantined at home. Of this number (191) 31 have died—about 16.2 per cent.

The nine cases remaining at home were continuously guarded by police officers, who had entire control of the domicile, superintending all going in and coming out, until the case passed from observation. In case of death the body is treated and funeral conducted as before indicated.

When the ambulance is ordered to the house to remove a case of small-pox, it is accompanied by an officer, who is assigned to the duty of fumigation.

He carries a leather pannier, which contains packages of brimstone, rolls of stout paper three inches wide, a pot of paste with brush. The rooms or section of house occupied by patient are prepared for fumigation by raising the carpets and hanging on lines stretched across the room, on which is also hung all clothing, bedding, etc., supposed to be infected.

The crevices about windows, doors, floor, or wherever found, are securely covered by the strips of paper.

A tub containing two or three inches of water is placed in each room, into which a shallow iron vessel is deposited, on bricks, which raise the vessel just above the surface of the water.

A sufficient quantity of brimstone is thrown into the vessel, and two ounces of alcohol sprinkled upon it to insure combustion. Fire is applied and the fumigator retires, pasting the door of exit on the outside.

He remains in charge of the house eight hours. If the house is small, or the entire house needs fumigating, the occupants are removed for the operation.

The process has proved entirely satisfactory. Sulphurous acid gas is preferred to chlorine gas on account of its cheapness and the ease and certainty with which it can be generated.

The convalescent, before leaving hospital or domicile, receives several baths or scrubbings in a warm 5 per cent. solution of carbolic acid, special attention being paid to the head. All clothing, before

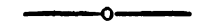
leaving the hospital, is thoroughly fumigated in the close brick fumigating chamber connected with the institution.

There are 54,000 children attending the public schools of Chicago. A necessary condition of admittance, at the commencement of each school year, is the presentation of a certificate from a physician, licensed by the State Board of Health, that the bearer has either been successfully vaccinated by the subscriber, or that he bears evidence of such successful vaccination. During the first fortnight of school every child is re-examined by the medical officers of the health department. If the evidences of vaccination are not satisfactory to this officer, the child is returned to his parent or guardian with a statement and a re-vaccination requested. In 1879 2,700 children were thus returned to their homes, and only re-admitted to school upon the certificate of the health officer.

No child of school age, and attending the public schools of this city, has been afflicted with small-pox during the past three years.

Wherever small-pox is found all the occupants of the infected house, and also of two blocks each way adjoining, are vaccinated, and when more general infection is feared, whole neighborhoods are canvassed. Since it has become generally known that nothing but bovine virus is used by this department, there has been no difficulty in securing vaccination to any extend desired.

By municipal ordinance vaccination is made compulsory whenever the Commissioner of Health orders it, and I conceive it to be the duty of the State to take charge of this matter, for it is altogether too important to be left to the caprice of the individual.



Punishing Children.—Anna C. Brackett, in the *American Journal of Education*, calls the attention of teachers to the liability of children to be punished or corrected without their clearly knowing why. "They may thus perhaps understand," she adds, "what often seems to them so incomprehensible—why a child who has been rebuked for some disorderly conduct repeats the offense almost immediately, giving the impression of willful and malicious wrong-doing. The same mistake is frequently made in recitations. A pupil's answer is pronounced wrong, and the question passed to another, when he does not know what his error is, and often fancies that it lies in quite a different direction from that in which it really lies. One of the most successful teachers we know, is almost invariably in the habit, after having passed a question and received a correct answer, of asking the pupil who had failed: 'Why did I pass that question?' A few trials of this simple interrogation will soon, we think, convince any teacher of the truth of what we say. The most astonishing misunderstandings are thus continually brought to light, and we become convinced of how double-edged a thing is this language which we use so thoughtlessly and freely."

THE CONTAGIOUS DISEASES ACTS OF GREAT BRITAIN.

ABSTRACT OF THE EVIDENCE BEFORE THE SELECT COMMITTEE OF THE HOUSE OF COMMONS ON THE CONTAGIOUS DISEASES (WOMEN) ACTS.

Prepared by J. Birbeck Nevins, M.D., London; one of the witnesses before the Select Committee: President of the National Medical Association for the Repeal of the Contagious Diseases Acts.*

EVIDENCE OF SURGEON-MAJOR DR. ROBINSON IN FAVOR OF THE ACTS.

Dr. Robinson is Surgeon-Major of the Scots Fusilier Guards, to which he has been medical officer about twenty-seven years. "The main point of his evidence, and the reason why he came before the Committee, was to show THE ENORMOUS BENEFICIAL EFFECT WHICH THE ACTS HAVE PRODUCED by reducing the proportion of hospital cases in Windsor as compared with London" (2385–6), and also that "the whole of the difference between London and Windsor is due to the Acts" (2387). In order to do this he laid before the Committee two kinds of evidence. First, Impressions and Recollections as to the comparative amount and severity of venereal cases in his battalion previous to the Acts in Windsor and since that date; and Second, Statistical Tables, to prove what he had advanced on the strength of his impressions. He was quite certain that venereal disease, previous to the Act in 1868, was as great in amount (2170), and even more severe among his men when quartered in Windsor than when in London (2419 to 21). The hospitals used to be crowded with such cases in Windsor, while now they are comparatively empty. He is certain that "THERE WAS NO REDUCTION WHATEVER IN THE AMOUNT OF DISEASE BETWEEN 1860 and 1867" (2414) when the Act was put in operation, and the benefits were IMMEDIATELY felt on the introduction of the Act (2083). These benefits still continue, and he is sure that they are to be attributed to the Acts (2205):

We give his Table, brought to the scale adopted in all the Army and Navy Reports, viz., ratio per 1,000 men for a year.

Scots Guards—Returns reduced to a uniform standard of one year and 1,000 men:

Period.	Year.	Annual Ratio per 1,000.			
		Primary Syphilis.	Gonorrhœa.	Combined Diseases.	
1st Period.....	1864.	145.9	120.5	266.4	No Acts.
2d "	Aug., 1866, to Feb., 1867.	54.4	57.4	111.8	No Acts.
3d "	1867.	70.4	67.2	137.6	No Acts.
4th "	1870.	61.0	66.9	127.9	Acts 2 years in force.
5th "	1872.	64.9	58.1	123.0	" 4 "
6th "	Oct., 1874, to April, 1875.	95.4	63.6	159.0	" 7 "
7th "	" 1875, to Mar., 1876.	27.8	87.0	114.8	" 8 "
8th "	1876.	57.7	62.1	119.8	" 8 "
9th "	1878.	33.4	58.4	91.8	" 10 "

* Continued from p. 319.

In 1864 there were no Acts, and the ratio of primary sores was 145.9 per 1000, *which fell* to 54.4 per 1000 (almost two-thirds of its amount) by the 28th of February, 1867, above a year before there was any Act in Windsor. Dr. Robinson affirmed that "THERE WAS NO DIMINUTION IN THE NUMBER OF CASES BETWEEN 1860 and 1867" (2074-5-6-7-8-2149-2414-2446.) This assertion was made in such a variety of forms, and to so many different members of the Committee, and at such different periods of his examination, that its purport cannot be mistaken, and we can only leave it for himself to reconcile his statements with the table put in by himself.

When the Table is examined still further, we find that primary syphilis fell from 145.9 in 1864 to 54.4 in 1866–7, above a year before the Act—that it ROSE to 61.0 in 1870, two years AFTER the Act was put in force—that it ROSE still higher to 95.4 per 1,000 in 1872, FOUR YEARS AFTER the Act was in force—and that in 1876, eight years after it was in operation in Windsor, the ratio was still 57.7 per 1,000—higher by 6 per cent. than it was in 1866–7, before there was any Act in Windsor at all.

If the *combined* diseases (primary sores and gonorrhœa) are taken into consideration, the ratio per 1,000 was 266 in 1864, and it *fell* to 112 in 1866, without any Act. The ratio has never been so low since then until 1878. Yet this witness presented himself before the Select Committee "to show the *enormous* beneficial effect which the Acts have produced" in reducing venereal diseases in Windsor.

"In 1868 the Act came into force in Windsor. Will you kindly give the Committee *your* experience of the operation of the Act with regard to the soldiers who were under your medical charge?" "How soon did any amelioration show itself?" Ans. "The amelioration showed itself immediately that the Act was put in force there" (2083).

It would scarcely be imagined from this answer that Dr. Robinson had had no experience of his own whatever since 1868, but such is the case. "I have not served in Windsor since 1868, but I have the recorded figures for the year [not 1868 about which he speaks so confidently, but from the year] 1870, which was the first period, after the Act, of the regiment being at Windsor" (2154). So that he informed the Committee, in answer to a question about his own experience, and the men under his own charge, that the benefit from the Act was immediate after 1868, and yet he was never there at all himself, and his men were not there until two years after the time of which he spoke so confidently.

After this we are scarcely surprised to find, from the Army Reports, that so far from the Acts being followed by "immediate" benefit, disease ROSE in Windsor from 58 in 1867 to 136 in 1868, the year the Act was introduced, and that it never fell down to its original standard until concealment of disease invalidated the statistics.

In 1868 the number of brothels in Windsor was reduced to less than one-half (2186-7), and in 1871 the vicar of Windsor specially directed the attention of the magistrates to a number of beer shops which were used as brothels. The mayor took up the matter energetically, and in conjunction with the other magistrates, at once closed 12 of these houses (2210–11). This vigorous course was followed by a great reduction in disease, which is ascribed by Dr. Rob-

inson to the operation of the Acts (2205). He "really could not say whether they were suppressed by virtue of the Acts or not" (2201). He was not aware of the above steps taken by the local authorities quite independently of the Acts (2207). He has been often quartered there, but this important measure was not known to him until informed of it by the Committee; and even after this and the benefit resulting from the military picket were pressed upon his notice, he still "attributes all the improvement, subsequently to 1868, entirely to the operation of the C. D. Acts. What that improvement amounted to during the first 8 years of the operation of the Act is shown in the following paragraphs.

His own table shows that primary syphilis was 145.9 per 1,000 in 1864, and that it had fallen to 54.4 per 1,000 in one battalion of the Guards and to 70.4 per 1,000 in another battalion in 1867, a year *before* the Act was in force in Windsor; therefore that large fall was not due to the Acts.

In 1868, brothels and prostitutes were much reduced in numbers in Windsor, but certainly not by the Acts, which contain no provision whatever in that direction. Temptation and the opportunity of contracting disease, were, to some extent, lessened thereby, but Dr. Robinson's Table does not show any reduction of disease in 1868, for the simple reason that neither he nor his men were there, and the Army Report does show a RISE from 58 to 136 per 1,000 in 1868.

In 1870—the first year in Dr. Robinson's Table after 1867—the ratio of primary syphilis was higher by 6 per 1,000 than in 1867. This certainly does not show any reduction of disease after 1868, produced by the Acts.

In 1872, *four* years after 1868, primary disease was higher still. It was *higher by* 10 per 1,000 than in 1866–7, when there was no Act.

In 1874, *six* years after 1868, it was 95 per 1,000, *higher by* 40 per 1,000 than before the Act.

In 1876, *eight* years after 1868, it was still higher by 6 per cent. than it was in 1866–7, before there was any Act at all.

If disease *rose* steadily and rapidly for six years after the Act, and in eight years was still higher than before it was introduced, we know no process of logic or sanitary science by which Dr. Robinson can prove that a fall in the ninth year was due to an Act which had been worse than inefficacious for eight years; especially as the fall to 27.8 per 1,000 in the seventh year was followed the next year by a rise to more than double the amount, the Act still remaining in full force.

EVIDENCE OF MR. MYERS, SURGEON OF THE COLDSTREAM GUARDS, IN FAVOR OF THE ACTS.

The statements which Mr. Myers placed before the Select Committee were, in substance, as follows:

"There has been a smaller amount of primary venereal sores among the men of my battalion of the Coldstream Guards in Windsor than in London during the last few years; but there used, many years since, to be as much in Windsor as in London.

"Windsor is now under the Acts, London is not, and Windsor was not under the Acts some years since.

"Therefore the difference is entirely due to the presence of the Acts.

"There may, no doubt, have been many improvements in Windsor of a moral and sanitary character, of which I was previously ignorant, independent of the Acts, but I maintain that it is the Acts which have made the difference of disease in my battalion" (2,738 and subsequent numbers." See also substance of his evidence throughout).

"Other places may have had less disease, though not under the Acts, than my men in Windsor. That does not alter my opinion. I go by my own experience. A limited experience is more valuable and trustworthy than a more extended one. My men have had less disease in Windsor than in London, and I adhere to my statement that it is the Acts which have produced the difference.

"I do not agree with Mr. Inspector-General Lawson's method of treating statistics, or with his theory about epidemics of syphilis like small-pox, etc., or with Mr. Berkeley Hill's views about venereal sores; but I do agree with Dr. Parke's theory about recruits, though I do not profess to have studied his figures, or to explain how the results differ so widely from his theory.

"The Acts were introduced into Windsor in April, 1868, and there was an increase of 39 per 1,000 in the amount of disease among my men during that and the subsequent four months; therefore, the Acts had not had time to produce their effects in those four months; and even at the end of ten months there was only a reduction of 11 per 1,000 (year 1868–9); and it was not until September, 1870—two years and a half after the Act was introduced into Windsor—that my table shows any real reduction of disease. Therefore it took two years and a half for the Acts to get into working order, even in a small place like Windsor; because, as I am certain that it is the Acts that have produced the present reduction of disease, and it was above two years before that reduction was apparent, that is a proof that it takes the Acts a good while to get into effective working order.

"There was a great reduction of disease in 1867, previous to the application of the Act to Windsor, and it followed a system of picketing one or two notoriously bad and diseased brothels in Windsor, and preventing soldiers having access to them, and the bad brothels in Windsor have been much reduced by the action of the vicar and the magistrates; but still I maintain that it is the Acts which have reduced disease in that town, although they may not give the police any power over the brothels or the women, if they go up regularly for examination.

"For a short time (seven weeks) in 1874 there was not a single case of primary sores in hospital in Windsor among my men, and such a thing never happened in London—therefore, as Windsor is under the Acts and London is not, this freedom from disease was entirely due to the Acts."

WINDSOR, AS IT STANDS IN SIR WM. MUIR'S NEW TABLES.

As this station was placed so prominently before the Select Committee as proving, in an unquestionable manner, the beneficial sanitary influence of the Acts, it is therefore not a little startling to find

the position which it really does occupy in Sir Wm. Muir's new Tables—C.

PRIMARY VENEREAL SORES.—In four out of the six years in this table, Windsor is the *worst of all the subjected* stations, and the worst but one in the two other years. It is *worse than seven* of the fourteen UNsubjected stations in 1875; than eight in 1876; than eleven in 1873; and *worse than twelve* in 1877.

SECONDARY SYPHILIS.—It is the *worst of all the subjected* stations in 1873 and 1875; of all but one in 1878; of all but two in 1874; and the worst of all but three in 1877. *It is worse than all the UNsubjected* stations but one in 1875; all but two in 1873, 1874, and 1878; all but six in 1877; and in only one year (1876) does it compare favorably with the unsubjected stations.

THE CONSTANTLY SICK FROM ALL FORMS OF VENEREAL DISEASES PUT TOGETHER ARE HIGHER IN WINDSOR than in seven of the fourteen UNsubjected stations in 1874, 1876, and 1878; higher than in nine of them in 1875; and higher than in ten of them in 1873 and 1877. The constantly sick are higher in this much-lauded station, on the average of the whole period of Sir Wm. Muir's Tables, than in nine of the fourteen stations which are destitute of the so-called "protection" of the Acts.

MR. BOND'S EVIDENCE RELATING TO THE METROPOLITAN POLICE IN FAVOR OF THE ACTS.

Mr. Bond is surgeon to the A Division of Police. He has had no practical acquaintance with the working of the C. D. Acts, which do not apply to the police or to London, but he was called to give evidence on some disputed questions relating to primary sores, and to the amount of venereal disease among the police force. His evidence is, in reality, simply an expression to the Committee of his opinion on certain questions connected with the C. D. Acts, and a statement of his experience as to the prevalence and severity of venereal disease in London at the present time, compared with twenty years since.

The treatment of syphilis has improved during the last twenty years, but the severity of the disease, or its type or character, has not changed in the slightest degree. He is aware that that opinion is not shared by the whole profession. The horror and dread of the disease are less than they were, because it is better known and treated; and the deaths are, therefore, possibly not so many as they were.

He "could not have cured many of them except by a year's constant treatment. Many of them stayed—against their will, being detained compulsorily—over twelve months. I think the power of detention should be unlimited." [In other words, he wishes an Act of Parliament to be applied to an undefined class of women throughout the whole of the kingdom, which should place the power of imprisonment for years of any such diseased women, in the hands of any man who may happen to be the surgeon of the lock ward of the hospital, to which she has been compulsorily sent.]

"I should say that the amount of disease amongst the metropolitan police, even allowing for undetected cases, is not large." A table

was handed in, from which, and the supplement to his evidence, it appears that 1.7 per 1,000 of the police was the actual amount known to be affected with venereal disease on the average of four years, 1875–78.

About half the police are married.

DR. BARR'S EVIDENCE RELATING TO PROSTITUTES IN LUMP AT ALDERSHOT IN FAVOR OF THE ACTS.

Dr. Barr is the Examining Surgeon at Aldershot, and also Visiting Surgeon to the Hospital. He described in touching terms the condition of the prostitutes on his first acquaintance with them in Aldershot. At that time there was no hospital accommodation whatever for them, and the degree in which they were swarming with vermin and itch is described. "A large number were suffering from disease in very severe forms, ulcerating soft sores of a very virulent character, and gonorrhœa of the most irritating character, and women suffering also from constitutional syphilis in a state the most serious and grave that I can mention." By the provision of hospital care and treatment the women are now nearly free from the mere dirt accompaniments of disease, but the present condition, also, of many of them is described by him as follows: "From protracted prostitution, excessive intercourse and former disease and ulceration, the parts get so altered that they are not so sensitive to diseased matter. I know a woman who has been a prostitute in Aldershot for eleven years, and her parts are simply a mass of cicatrices, the vagina being really as hardened as the cicatrix of a burn on the skin. That is the reason why the older women do not get diseased, although, from affording such a great amount of intercourse, the men may become very extensively diseased by them through 'mediate' contagion. It is just one-half what it was formerly, and I must say now, as I have said before, and been hotly abused for it, that one reason for the want of greater success of the Acts has been the small number of women comparatively to the large number of troops. At the end of last year there were only 128 women on the register, and of these 35 were in hospital, 5 in prison, and 10 or 12 '*unfit for prostitution*' from some cause or other. Take that number of 52 from 128, and the remainder, 76, are supposed to furnish themselves to 12,000 or 13,000 soldiers (*i. e.*, one woman to above 170 soldiers). Now of course I must not be understood as saying that there are not enough women, because my object in having anything to do with these laws is, equally, eradication of the disease and the diminution of prostitution to the lowest minimum that is possible. I merely speak of it in its sanitary light. That it is so cannot be disproved." "I understand your answer to mean, that though as a moralist you desire the diminution of the number of prostitutes, as a medical man you are compelled to say that there are at Aldershot too few women for the use of the men?" Ans.: "That is coming it pretty strong. I intended to say that, in a sanitary sense, more disease is contracted when the women are comparatively few with regard to the number of men than when the women are in larger numbers. I do not mean that I should recommend the encouragement of more women. On the contrary, I should recommend that the people who take an inter-

est in the soldier should do all they possibly can to lessen the amount of unrestrained sexual feeling among them. Let them know that by yielding to their propensities 'among *a few*' they are likely to be diseased. I stated this, and I state it again, that in consequence of having so small a proportion of women to men there is more disease propagated than if there were five or six times the number of women."

It is admitted that there is not less immorality now than formerly among the men as a consequence of the Acts, and the natural result from this condition of things is shown in Dr. Barr's evidence. "I am perfectly sure that a large number of women afford intercourse to an almost incredible number of men." "There are some women who are utterly careless as to the number of men with whom they consort." "They will receive more than twenty different men—the number depends altogether upon the amount of the fees the woman receives."

Dr. Barr's evidence upon this point is remarkable: "I do not suppose the number of old women on the register is larger than it used to be." "They are called old when they get towards thirty." The actual number of "old" women in Aldershot (taking his definition of age) is above three times as great as it was in 1867, and the proportionate number is greater still. In 1867, only one prostitute in 38 on the register was thirty-one years old or upwards. In 1878, on the contrary, one woman in 5 was thirty-one years or upwards. In 1867, only one woman in 7 was twenty-six years old or upwards. At the present time one-half the registered prostitutes are this age or upwards (Harris's Report for 1878, p. 14, col. 11, 12, 13). There are nearly twice as many women of 26 or upwards as there were when the Act was first introduced. This extraordinary increase of "old" prostitutes proves, either the almost insuperable difficulty of escape from prostitution since the Acts were in force, or else it shows that the increased gains from the limited numbers make it worth their while to continue in prostitution. In either case, the fact becomes apparent that the effect of this legislation is to retain the women in their career of vice, and to make a permanent class of such ministers to lust, instead of the temporary and casual sojourn in prostitution that was the universal experience previous to this legislation. (See Action on Prostitution, chap. vi.)

Dr. Barr expresses his belief to this effect, which appears to be supported by the smaller number of young prostitutes on the register in Aldershot at the present time than formerly. (Harris's Report, 1878, p. 14.) This support is, however, more apparent than real; for the same Report which tells of a reduced number of young girls on *the register* of prostitutes in Aldershot, gives a list, at page 31, of young girls between 15 and 18 years old, "who *had commenced immoral practices*" in Aldershot; and another list, at page 28, of young girls of the same age, "who had been found in *improper places* and *bad company*," and had simply not been put upon the register by the police. The number of young girls put upon the register, and the number thus known to the police, but not registered, is little short, on the average of the last six years, of the number on the register during the average of the previous six years. It is, therefore, not so much a question of actual reduction in the number of young girls falling

into prostitution in Aldershot since the Act was in force, as of the number put upon the register by the police, or known to them but not put upon it. Captain Harris has, of late years, claimed great credit for the Acts in reducing the number of juvenile prostitutes. It appears really to be a simple question of whether the police have orders to register them or not—the actual number has varied but little.

During the first half year of hospital provision in Aldershot, the condition of the prostitutes was most lamentable, as described by Dr. Barr, and, at that time, the amount of disease was so great that, on an average, every registered prostitute was admitted three and a quarter times into hospital during the year. Disease fell so rapidly after hospital attendance was provided, that in the next year but one they were admitted less than two and a half times (2.40); and the following year only twice. In this year, 1870, the periodical examinations were in full force throughout the subjected stations, and disease began to rise among the registered prostitutes. It has gradually risen from 2.0 to 2.5, 2.7, 3.2, 2.8, 3.2, 3.1, 3.1; *the last three years showing more disease* amongst registered prostitutes, *than any period for the last ten years.* There has been a steadily progressive increase of disease among the registered prostitutes, as the periodical examinations have become more firmly established and steadily practiced (Harris's Report, 1878, p. 9, col. 31). When questioned on this point, Dr. Barr acknowledged that, "As the number of women has decreased, they have become, by comparison, apparently oftener diseased. There are many women who are perpetually in hospital."

The consequence of this increase of disease among the women is shown in the diminished rate of improvement among the men, which has fallen off from 6.6 per cent. yearly to 2.6 per cent.

The great spread of disease in this manner is mentioned so frequently by Dr. Barr that references would be wearisome and useless. He describes what he means in a previous answer: "A woman at the time is free from disease, and the fact of her communicating venereal to a soldier is not due to her own unfitness, but to contagious matter that she retains within her, the result of intercourse with a diseased man." "Gonorrhœa, syphilis and sores are communicated in that way; the woman herself remaining free." When it is remembered that Dr. Barr has spoken of the "incredible amount of intercourse" with each woman—being more than twenty men in the limited portion of the day that soldiers are away from barrack—it will at once be evident what an amount of disease is communicated in this manner, and no surprise will be felt that the rate of improvement among the men in Aldershot has been reduced from 6.6 per cent. annually before the Acts to 2.6 per cent. annually since then."

Dr. Barr gives an explanation, but without apparently intending it as such, of some circumstances that are continually dwelt upon by Captain Harris in his Report, as proving the great success of the Acts, morally and hygienically:

1st. The number of prostitutes is greatly diminished.

2d. They are very seldom diseased on examination.

3d. A large number leave the district annually.

4th. The new-comers into the subjected districts are generally found to be diseased on their first examination. This last fact is often dwelt

upon, especially as showing what a diseased condition all the women must be in, outside the charmed circle of the subjected districts.

Dr. Barr's apparently unconscious explanation of all these circumstances is contained in Ans. 1782:—"A woman comes regularly for examination, and then I miss her for a time. It appears that, finding herself diseased, she comes up to a house in St. John's Wood, a place where such women live, and there she will remain. There are several women who do this kind of thing, and they also propagate disease in this kind of way. If she should not get better by the means she uses, she will come down to the hospital, and of course will be found diseased and detained."

It is, in short, the most natural thing possible. She remembers a former compulsory detention in hospital, and desiring not a repetition of it, she leaves the district. "Left the District," appears in the Report. She goes to an "unprotected"—*i. e.*, an unsubjected district—and carries her disease with her, adding thus to the amount of disease to be contracted there, and afterwards imputed to its blame as being an "unprotected" district. She becomes so bad that she can remain no longer, owing to the blameworthy absence of hospital care for this unhappy class of patients in so many parts of the country, and then she returns in despair to the subjected station and its hospital treatment, accepting the compulsory detention as best she may. She puts herself in the way of the Acts' police, is taken before the doctor, and, as he says, "is found to be diseased, and is detained." Dr. Barr's information on this point is valuable and opportune.

(To be continued.)

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Never too Late to Learn.—It is a great mistake to suppose that little can be accomplished if a man has reached the age of thirty or forty years. Nine-tenths of our clever men have actually exhibited more vigor of intellect at fifty years of age than at forty. Franklin was forty before he began, in real earnest, the study of natural philosophy. The principal of one of the most flourishing colleges in America was a farm servant until he was past the age when most students have completed their collegiate education. Sir Henry Spelman did not begin the study of science until he was between fifty and sixty years of age. Greek was the first foreign language which Cato, the celebrated Roman censor, acquired, and he did so in his old age. Alfieri, whose writing has caused a revolution in the dramatic literature of Italy, was left without a father in his infancy and wasted his early years. John Ogilby, the author of poetical translations from Virgil and Homer, began the study of Latin when about forty years of age, and Greek in his forty-fourth. Boccaccio, one of the most illustrious writers that ever appeared in Italy, suffered nearly half of his life to pass without improvement. Handel was forty-eight before he published any of his great works. Dr. Thomas Arnold, of Rugby, learned German at forty, in order that he might read Niebuhr in the original. Let these examples tell upon your character, and invigorate and cheer you in your undertakings.

A NEW METHOD OF EXPERIMENTAL INVESTIGATION INTO THE CAUSE OF YELLOW FEVER UPON THE BASIS OF SIMILAR DENSITIES.*

By B. F. Gibbs, M.D., Medical Inspector United States Navy.

To consign a theory, such as seems to be contemplated by the above title, to the limbo of indefinite suspension would be a most natural impulse, when we consider the treatises and essays, numbering among their authors some of the most distinguished men of our time, which have been written upon the subject of yellow fever. The writer would invite, very briefly, the attention of even those most disposed to be impatient, to the plan he now proposes for the benefit of science and humanity, which has special reference to investigating the cause of yellow fever, and which is the result of more recent study and reflection than could have been given in the former years of his life, when busily engaged in battling the pestilence in its own chosen fields.

In the first place, when speaking of the yellow fever "germ" it will be understood that those organisms, microdymes or albuminoid entities are indicated, which have no normal existence in the human economy, and if absorbed produce the disease which we recognize as yellow fever. Their existence in the present state of our knowledge, it is unnecessary to state, is but a rational deduction. Still every investigator upon entering this field of labor projects a certain course which is evolved from his reading or experience, having for its object the discovery of the parent cell by which the atmosphere is poisoned. The same has been true of yellow fever commissions, who, while seeking facts, which in a general way bear upon the etiology of the disease, the probability of finding the microscopic germ has been most apparent in the minds of investigators. With this view the air, earth and water selected from certain focal points of disease have been subjected to crucial examination, and while no discovery has been made thus far of such germinal matter, it is believed that were an examination conducted after the plan about to be proposed, our hopes and aspirations would be realized.

The habitat and birth-place of yellow fever has some peculiarities. The latter particularly requires the presence of certain temperature, moisture, exhalations, and is made more complete if the space be confined, as the hold of a ship, and involves the presence of such gases as carbonic acid, carburetted and sulphuretted hydrogen with some form of organic matter. I state these conditions confidently from those who have been present on several occasions at the birth of the disease in ships, but more particularly on the occasion of its appearance on board the United States store-ship Relief, at Pensacola, in 1863. These gases were present to such a degree as to be distinctly recognized at every hatch in the ship. The organic matter and ani-

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* Written for American Public Health Association, New Orleans, Dec. 7–10, but for want of time referred for publication without being publicly read.

mal exhalation were offensively apparent. The history of this outbreak was published in the American Journal of the Medical Sciences in 1866. It is sufficient here to say that the origin of that epidemic was an imported germ, in all probability transferred to the storeship in freight from blockade runners, which were captured running from Havana, and the filthy condition of the ship afforded the proper conditions for developing a most malignant epidemic; and as I did then, so do I now point to those accumulations of filth, confidently asserting that they contained the germs of yellow fever, although they were not distinguished then, and have not been since. My examinations were then made in a crude way, and were fruitless of results.

The constant failure which has attended the examination of the deposits from air of hospitals, ships, prisons, dwellings or wherever such collections may have been made, it seems to me has been due to the fact that there was no medium employed of the proper density to contain, carry or attract the germ or organism. The filtration of the air through gun cotton or glycerine has not realized the hoped-for result, either because the locality was for the moment barren or nature was addressed in an incomplete and imperfect manner. We should as soon expect an herbaceous plant to exchange places with a parasite, in the conditions of germination, as we should look for the evolution of yellow fever in the absence of heat, and the nidus of the gases and organic matter before mentioned, which are found where the poison is evolved in its most malignant form. The parent cell, if we may call it such, which is capable of transportation, seems exceedingly heavy, and is moved with difficulty, while the poison evolved from this is moved by the wind several hundred feet at once. Be this as it may, if we wish to secure the germinal cause, the proper conditions must be bestowed upon a known focal point of the disease, so as to surround it for a prolonged period with an atmosphere having an acknowledged attraction for all floating organic matter. This brings me to the point which it is the object of this paper to explain.

The theory here advanced, and which is based upon many observations made in the beginnings of yellow fever, is that the focal points of origin in the home of yellow fever and in its exported germ are pervaded by gases of a denser character than the ordinary air, and always impregnated with animal or ammoniacal odors. This was particularly the case in the ship above referred to, and from which as a focal point the disease spread in every direction not restrained by rigid quarantine. With my present convictions, I feel that no better place can be found than a ship for seeking the cause of yellow fever, let the principle or organism be what it may; and while I may be able to point out the way, it will probably remain for some one else to make the experiment.

Supposing our experiment is to be made upon a ship whose hold is foul, and wherein the disease has been evolved and exhibited among the crew, our first effort is to bestow upon the atmosphere of this hold all of the conditions in an extreme degree which are known to favor the evolution of the yellow fever germ, such as a temperature of 80° F., which should remain constant for a week, with the

addition from time to time of carbonic acid gas, carburetted and sulphuretted hydrogen, and the odors arising from decaying animal matter, and to which moisture shall be added, so as to preserve the air at 80°, 100° being saturation.* In short, we convert the hold into a "culture cell." After treating the air of the ship for a week as above, and the germinal matter is supposed to have become fully developed, our next object is to float this heavy germinal matter, this being the character of yellow fever poison as already shown. Without disturbing the cargo, I know of no better plan than to supply a still denser atmosphere, and so accomplish this object. We have in carbonic acid gas a medium exactly suited to our purposes, and which possesses the additional quality of taking up organic matter. Without being positive in the matter, it seems fair to conclude that between the density of this gas and the specific gravity of organic matter, there must exist some similarity, and which would account for the manner in which the latter is suspended by the former. Such peculiarities in the character of carbonic acid gas we wish to avail ourselves of in seeking a means of collecting the parent germ of yellow fever. This, in my opinion, would be accomplished, whether such germ be floating or attached to decaying or fermenting matter.

The carbonic acid should be introduced in sufficient quantities to keep the vessel full up to the spar deck.

By requiring this gas to remain in the ship for twenty-four hours it will descend to the bottom of the ship and enter any avenues open to it, with an undoubted tendency to float upward any organic matter of the same or less density than itself. The above period having elapsed, we are now prepared to remove the carbonic acid gas with all it may contain.

How should this be done so as to be certain of perfect filtration? Some would prefer that it should be done through glycerine, lodged on the diaphragms of wire gauze or on finely perforated plates; others, that the gas be passed through gun-cotton. I would use either in the course of the examination, but primarily the gun-cotton, because it is a known fomites, and the objection which may be urged against glycerine on account of its known solvent action.

In reference to the precise plan of proceeding in using the cotton, I would fill 100 glass tubes with it, properly restrained with wire at both ends, so as not to be drawn through the tubes when the suction power is applied. These tubes I would support at each end by two boards placed on edge, properly provided with holes, through which the tubes would be passed and securely cemented; the whole to be enclosed in an air-tight box, so that the opposite ends of the glass tubes may open into two different closed compartments of the box. One of these closed compartments is to be connected by a pipe, which shall extend to the bottom of the hold of the ship, and the other compartment with a bellows or pump or other aspirating machine, so that the gas may be slowly extracted from every part of the ship. The hatches should be closed during the operation, and the aspira-

* This last condition, in the presence of the temperature indicated, would naturally exist in a ship in the tropics, and in more northern regions with the wind from seaward.

tion should cease as soon as all the carbonic acid gas shall have been removed. The motive power should be by a steam-engine, so as to ensure perfect regularity. A small pumping engine would be sufficient to set on the deck of the vessel.

The gas having all been removed, the box containing the tubes is now opened and the tubes are securely corked and sealed for future use under the microscope. The cotton may now be made to yield up whatever it may contain and deposit it upon the wire gauze or perforated plates covered with glycerine, by aspirating carbonic acid gas through the tube in a direction contrary to that by which it was passed when received from the ship. Should one tube fail to give results another may be used, etc.

In advocating a theory which seeks a solution of the difficulties which beset the separation of the poison producing yellow fever, the argument of similarity of densities may be more fully stated. Any one will admit the truth of the statement that in the economy of nature the sporules of plants bear a relation in their specific gravity to that of the air, which fixes the fact of their limited or extensive distribution. In other words, whenever sporules are intended to float indefinitely in the atmosphere, as in the case of those of the *lycoperdon*, the common puff-ball, they have about the same specific gravity as the medium in which they are set free and disappear in clouds. Sporules of a greater specific gravity float closer to the earth when moved by a disturbing force.

This difference in density of an organic germ may be given greater buoyancy, by providing a medium of greater density at which it may float. In using carbonic acid gas, it is plainly evident that a germ-cell would be sustained that ordinarily falls to the ground. The proper filtration of this gas should then give us the parent cell we seek. So, without further argument, it may be conceived how similarity of densities, supposing the yellow fever germ and carbonic acid gas to resemble each other in this respect, may become the most important consideration in collecting the germinal matter which fails to appear in ordinary air filtration, on account of the greater density of such matter, however carefully it may be sought at its point of solution.

All of the more modern writers upon yellow fever agree upon this fact regarding the yellow fever germ, that it never rises more than a few feet above the surface of the ground, and this was insisted upon with great force by Dr. Nott, formerly of Mobile, Alabama. Dr. C. B. White, of New Orleans, gives its rate of progress when undisturbed.

The worst that can be said of the plan that is here outlined is that it may fail, like all other methods of investigation. But when we attempt an interpretation of the works of nature, or an investigation of her operations, the questions should be skillfully and perfectly addressed. It is only a rational deduction which is derived from a fair consideration of the peculiarities of the beginnings of yellow fever, and the conclusion would seem to favor a successful result.

There is a well recognized peculiarity regarding organic matter evolved in confined spaces, found floating in the air of ships and hospitals, which is, that there seems to be an intermittent emission, and

this, as it were, in clouds, This fact is known only through the sense of smell, as we find at times these spaces comparatively free of the well-known odor. Having this knowledge it would be unfair to expect the germinal matter of yellow fever contained in the hold of a ship to become suspended in the carbonic acid vapor if there were no ripening cells or sporules, although, at the same time, it is highly probable that any cell-growth may submit to its density and be carried off at any time. It is fair to suppose that if a puff-ball can increase its size 2,000 times in a single night, and whose origin is a most delicate mycelium, such a growth must be surrounded by the required conditions, whatever these may be. And in like manner the propagation of yellow fever is secured, if the germ and proper environment is provided, and is, so to speak, quickened into activity in a single night. Moreover, if, like the spores of fungi, the poison of yellow fever fills the air, and is invisible, there must be an origin, a source from whence the aerial poison proceeds. That it has an uninterrupted emission from its nucleus is highly probable from the fact that we find persons escaping in one epidemic and taking the fever in another.

If there is a parent growth of this invisible, floating, germinal matter which is so minute as to have hitherto escaped observation, and its density is not greater than that of carbonic acid gas, it is believed that by the plan proposed it may be floated and collected by this medium, and be caused to lodge by the aspiration described on the gun-cotton contained within the tubes.

In addition to the value of this plan in collecting the aerial poison which may be the result of septic fermentation, as is now believed regarding yellow fever by many intelligent investigators, the use of carbonic acid gas may be still further extended in collecting the organic germs of other contagious and filth diseases; but enough has been said to show the importance of this gas as an agent in collecting organic germinal matter.

The only experiment I have to give in corroboration of the above theory is in the following, which was several times repeated, viz.: Two transparent glass-stoppered bottles were filled at the same time, by means of a Davidson's syringe, with the air of a room which contained in abundance the particles shown in the solar beam. One of these bottles was sealed and the other filled with carbonic acid gas. The jar containing the latter gas, after standing some time, was so coated with the floating air particles on its upper inner side as to completely obscure the glass, which was before highly transparent. The jar containing only the air of the apartment had distributed evenly upon its inner surface these air particles which were shown in the solar beam. On the bottom of both jars was deposited the heaviest of the air particles, which seemed from their iridescent color to have been particles of coal-dust or ashes, and which even the carbonic acid could not float. This experiment seems to support the theory above advanced, and I am sorry to be unable to have the jars with me for exhibition here.

INSTITUTE D'HYGIENE.

The Medical Faculty of the University of France, at Montpellier, have received, from the Minister of Public Instruction, besides an increase of all its other laboratories, the power to organize an "Institut Complet d'Hygiène," and a grant of 25,000 francs has been given for that purpose, besides an annual appropriation for its maintenance.

Thanks to the liberality of the government, the Institut d'Hygiène of the Medical Faculty of Montpellier enjoys, from its first organization, ample accommodations for its various laboratories and museums. The laboratories are also supplied with many valuable instruments for conducting research and making experiments in the various departments of scientific research, and the museums are in possession of many valuable specimens.

The Musée d'Hygiène can never be fully developed without the assistance of the public. The present circular is intended to invite that assistance, and it is earnestly hoped that it will be successful.

The nature of such a museum embraces too great a variety of objects, the articles relating to the preservation of life and health are too numerous and diversified, too many branches of industry, too great a variety of inventions, are met with on every side, and are increasing too rapidly for any local institution, no matter how liberally it may be endowed by the government, to collect in a short period a sufficient number and variety of objects to make the museum of real value without the generous aid of the public.

But the Minister of Public Instruction, charged though he be with the direction of medical education, is not the only person interested in the foundation and prosperity of such an institution. It offers to every one an easy means of obtaining instruction and ample facilities for systematic experiment and research regarding every article that may be considered as useful or injurious to man; in improvements made in the various materials and instruments that he is every day using; in the various agents, whether healthful or injurious, with which he is surrounded; in the different means by which, in the ordinary course of life, surrounded by the most deleterious substances, the results of his modes of life, of crowded habitations, various industries, factories, and the most successful means of combating all these deleterious influences; in fine, it offers the means which the science of hygiene places within his reach, to improve his condition, both moral and physical.

In consequence of the direct advantages which such an institution affords to every one in the community, the pleasure as well as the means of instruction it offers to the public, the profits and other advantages that are likely to result to individuals and to institutions by developing enterprise and stimulating competition, it seems that an appeal can be made to every one to participate in developing it by contributing such articles as their generosity may prompt them to offer.

An appeal is therefore made:

To Producers and Merchants for samples of such articles of merchandise as contribute to the support of life, such as alimentary sub-

stances of every kind, indigenous or exotic; the means of preserving or of preparing these articles; various recipients and culinary utensils and the like; beverages used in different countries; spices, condiments, seasoning of every kind; materials used for making clothing, materials impermeable to water, permeable to perspiration, absorbing or repelling caloric; samples of dress in different countries, or used by different professions; perfumery, cosmetics; means of preventing change in the various organs by the pressure of certain articles worn for the purpose, such as corsets, drawers, stockings, etc.

To Mechanics and Manufacturers a request is made for models or samples of the various articles relating to hygiene, such as apparatus for bathing, for hydro-therapeutics, heating, lighting, ventilation; for instruments for filtering, for drains, closets; for furniture for schools and the like; articles pertaining to the hygiene of the sight, of hearing, of digestion—as spectacles, artificial teeth, and whatever relates to their preservation; instruments for the examination of food and the detection of adulterations; disinfecting agents; meteorological instruments, etc.; building materials of all kinds—stone, wood, slate, anhydrous coverings, cements, asphalts, mosaics, bitumens, stucco, walls impermeable to water, prepared wood, non-inflammable wood, for specimens of dyed tapestry; of envelopes colored with or without poisonous substances, etc.

To Extensive Manufacturers and Companies employing great numbers of persons, for the means of prophylaxis adopted, and the means of preventing danger to life, used or tried in their establishments; the kind of chimneys, smoke consumers, ventilators, faucets, safety-valves, means for preventing explosions, the escape of gas or other poisonous substances, fire extinguishers, wash-houses, disinfecting agents, means of decantation, inhalers, means of aiding respiration, diving-bells, safety-lamps, system of lighting mines, signals of all kinds; for plans, regulations and statistics of their factories, etc.

To Public Officials for articles and materials used for preserving general health; to Army Officers for articles of clothing and military equipments, especially those for protecting the soldier from the rigors of climate and from wounds; ambulances or other means of transporting the wounded; the materials of which hospitals are constructed; plans of barracks, of camps; statistics of mortality, etc., etc. To Municipal Officers for systems of sewers, the openings of sewers, public urinals; aqueducts, water-pipes, gas-pipes; fountains, wells, cisterns; for materials for paving, etc.; plans of cities, of villages for working-men; baths, public washing establishments, markets, slaughter-houses, cemeteries, dead-houses, public buildings, prisons, hospitals, schools, barracks, etc. To Civil Engineers and Surveyors for the means of securing the safety of public roads, of rendering the soil more healthy, their means of drainage and the material used; sanitary regulations affecting large districts, such as plantations of eucalyptus, of pines, their system of boring artesian wells, etc. To Charitable Societies for plans of their asylums, orphanages, houses of refuge; statistics relating to them, etc. To Sanitary Inspectors, Members of Health Societies, for samples of adulterations of articles in common use, unwholesome meat, entozoa injurious to man or to animals, used as food; parasites destructive to cereals, to vegetation,

etc.; adulterated foods and the substances employed in the adulterations.

To Engineers, Architects and Inventors of every kind, for articles relating to public or private hygiene.

To Surgeons in the Navy, to travelers, to private individuals and to all who take an interest in sanitary affairs, for useful information or suggestions,

To Authors of Geological Maps; for geographical, isothermic, climatological or pathological charts or tables; statistics of mortality, tracings of endemic or epidemic diseases, and for every description of documents relating to hygiene.

In acknowledgment, the names of the donors will always remain affixed to the objects which they contribute, and they can never be removed. Even in case of duplicates, if they should be exchanged for similar articles with other institutions, one of the conditions of exchange will be, that the name of the donor to this institution must always remain attached. Besides, full acknowledgment will always be made in all catalogues or descriptions published by the institution.

By means of this public exposition, and the periodical notice given to all articles contributed, all interested will find here a convenient and effective means of bringing articles relating to hygiene to the notice of the public.

An institution similar to the one we are about to found in Montpellier, has just been established in London. The object of this last is specially to do honor to the memory of the celebrated hygienist, Parkes. Although not organized until 1879, this museum, under the direction of University College, London, already possesses a valuable collection of articles of every description, due entirely to the liberality and patriotic zeal of manufacturers, engineers, architects, etc., in every city and town in England.

The knowledge that the articles contributed to this institution will be exhibited for the benefit of science, to promote the health, comfort or well-being of the human family, will be a sufficient incentive to many to aid in the establishment of such an institution.

EMILE BERTIN-SANS,

Director of the Institut d'Hygiène, and Professor of Hygiene to the Faculté de Médicine.

New York has vast resources. Among her citizens are men of wealth, possessing public spirit and unexampled liberality; public institutions for the amusement and the instruction of the public; medical colleges, animated with the spirit of progress, possessing great enterprise, and each desirous of reaching the seat of honor among her peers. Of all these, which will be the first to initiate so laudable an undertaking, one so well calculated to uphold the honor of the country and disseminate useful knowledge? As it must be accomplished by combined effort, it needs only a centre around which individual efforts may be concentrated to develop a most useful institution. A museum, rich in useful specimens, contributed by the public spirit of our citizens, could soon be formed, without proving burdensome to any individual or particular institution. Who will take the initiative?

T. P. C.

MENU.

Salicylic Acid—Dangers of Using it in Preserving Alimentary Substances.—The Minister of Commerce and Agriculture of Paris, has addressed to all the Prefects the following circular: The attention of the Administration has been directed to the danger caused to public health by the employment of salicylic acid in the preservation of alimentary substances, solid or liquid. I have submitted the question to the committee of public hygiene of France.

Having given to the subject their most earnest attention, and having analyzed in the municipal laboratory of Paris many articles containing salicylic acid, the committee have found that that substance is dangerous, not only by the direct effects which it produces on the system, but also in an indirect way by favoring the fraudulent introduction into articles of food of other substances either poisonous or unwholesome, and more particularly into wine made from dried grapes and into beer. The committee conclude that every article, solid or liquid, into which the smallest quantity of salicylic acid or any of its derivatives enter should be proscribed and its sale prevented.

This advice, which seems to me just in every particular, indicates the course to be pursued by administrative authority, which should always be the guardian of public health. I ask you, therefore, to adopt the necessary measure in conformity with the model which you will find accompanying this note, by the terms of which the sale of all alimentary substances, solid or liquid, containing any quantity of salicylic acid, or of any of its derivatives, is prohibited.

This is a most important order, and the "*Moniteur de la Policlinique,*" from which it is translated, adds the following note: "We call his attention particularly to the adulteration of *medicines* (produits pharmaceutiques) to which the *judicial authorities* and the *school of pharmacy* too readily close their eyes."—T. P. C.

Ice Pudding.—Boil in a farina boiler three pints of milk, or one quart of water; whilst boiling, sprinkle in slowly one quarter of a pound, or four large tablespoonfuls, of farina; continue a brisk boiling for about half an hour; when done, turn it into jelly moulds, and place it in ice or in cold water to stiffen. It thus becomes a beautiful ornament for the table, and may be eaten with wine or other sauce, pulverized sugar, or any condiment more pleasing to the taste. This pudding, even when a day or so old, may be sliced and fried brown, forming an excellent dish for breakfast.

Plum Pudding.—Boil in a farina boiler three pints of milk, or one quart of water; sprinkle in slowly a quarter of a pound of farina; continue boiling half an hour or more; stir in the fruit; put the whole in a bag, and boil till done.

Editor's Table.

Plumbing, House Drainage, and the Ventilation of House Sewers.—The law recently enacted by the Legislature of New York for regulating house drainage and plumbing work in New York and Brooklyn, has, as was to be expected, created a good deal of complaint on the part of incompetent workmen. Measuring the power of the health departments of these cities by their own willful disregard or ignorance of essential sanitary requirements, they have much to say of what the health departments may or might do in the premises, by compelling the plumbers to use patent gim-cracks or other worthless material of which they show, as hitherto, an amazing familiarity. Moreover, they are particularly loud in their complaints at being governed by mere theorizers. In their point of view, to know anything of hydraulics and pneumatics is theoretical knowledge only, and has no possible place among such practical men as they profess to be; and they urge this proposition in the face of innumerable illustrations in verification of their sincerity—of work wholly independent of any such knowledge—and hence this law.

But the plumbers of New York and Brooklyn are by no means singular in this regard. Two months ago we published an extract from *Van Nostrand's* from a report of the Citizens' Association in Chicago on the subject. In the District of Columbia the subject has been urged on Congress for two or three years, and finally legislative enactment obtained in advance of New York, directing the appointment of an Inspector of Plumbing by the Commissioners of the District, "Whose duty it shall be to inspect all houses in course of erection, and pass upon the plumbing and sewerage of said houses. *And the Health Officer of the District of Columbia is hereby authorized, under direction of the Commissioners, to execute and enforce regulations governing plumbing, house drainage, and the ventilation of house sewers.*"—Approved January 25, 1881.

In virtue of which the following excellent regulations have been established:

Sec. 1. These regulations governing plumbing, house drainage, and the ventilation of house sewers, shall take effect and be in force in the District of Columbia from and after June 15, 1881, and all work of the character named, placed in or upon any structure in the said District, shall be done in accordance with the provisions of the same.

Sec. 2. 1. It shall be the duty of the Inspector of Plumbing, under direction of the Health Officer, to sign and issue all notices and certificates, to keep a daily record of his work, including all notices and applications received, violations of these regulations noted, and all other matters which may pertain thereto; to make daily, weekly and quarterly reports, and an annual report of his operations to the Health Officer.

2. He shall inspect all houses in course of erection, alteration or repair, as often as may be necessary, and shall see that all plumbing, drainage and sewerage work is done in accordance with the provisions of these regulations.

3. He shall take and subscribe an oath or affirmation that he will faithfully perform the duties of his office, and shall, before entering upon its duties, execute a bond to the District of Columbia in the sum of five thousand dollars with three sureties, to be approved by the Commissioners, conditioned upon the faithful performance of the duties of his office and for the benefit of all persons aggrieved by his acts or neglect.

Sec. 3. It shall be the duty of every person doing business as a plumber, or engaged in conducting plumbing or house drainage in the District of Columbia, to register his or her name in a book, to be provided for that purpose at the Health Department, giving full name, residence and place of business, and in case of removal from one place to another, in said District, to make change in said register accordingly.

Sec. 4. Before proceeding to lay or construct any portion of the drainage system of any house, the plumber shall file with the Health Officer, for the Inspector of Plumbing, a plan thereof, showing the said drainage system entire, from its connection with the main sewer to terminus in house, together with the location of all branches, traps, ventilating pipes, etc.

Sec. 5. 1. Every soil, drain or waste pipe, above ground, shall be of metal. All soil pipes above ground shall be of iron, with leaded joints, not less than three inches in diameter, and shall be extended, full size, through roof of house.

2. No soil or drain pipe shall be laid under the house, unless absolutely unavoidable; when necessary to lay a soil or drain pipe under house, said pipe shall be of iron, with leaded joints, and so located as to be accessible for inspection.

3. All soil, drain, waste and supply pipes shall be concentrated as much as possible, protected from exposure, and shall be so located as to be readily accessible for inspection.

4. All "safes" under basins or refrigerators shall be drained by special pipes not directly connected with the sewer.

5. No rain-water leader shall be used either as a soil pipe or as a ventilator for sewer.

6. No brick or sheet metal flue shall be used as a sewer ventilator.

7. Rain-water leaders, when used in connection with any part of the drainage system of a house, shall be of iron with leaded joints.

8. All iron soil and sewer pipes shall be coated inside and out with coal tar pitch, asphalt, or some equivalent therefor, applied hot.

9. The weight of all iron pipe used shall be not less than:

For six-inch pipe,	20	pounds	per	lineal	foot.
For five-inch pipe,	17	"	"	"	"
For four-inch pipe,	13	"	"	"	"
For three-inch pipe,	9½	"	"	"	"
For two-inch pipe,	5½	"	"	"	"

10. All iron pipes, before being concealed, shall have openings stopped, and shall be filled with water and allowed to stand twenty-four hours for inspection.

Sec. 6. 1. No traps shall be placed on or at the foot of vertical soil pipes.

2. All water-closets, sinks, basins, wash-trays, etc., shall have suitable and approved traps placed as near as practicable to said fixtures.

3. A double trap shall be placed on every main drain at an accessible point.

Sec. 7. 1. Every main drain shall have an inlet for fresh air entering between the double trap and carried to such point on the outside of house as may be approved by the Inspector.

2. Each and every trap shall have a special vent pipe, of cast iron, extending either above roof of house or into soil pipe above highest fixture.

3. The vent pipe for each water-closet trap shall be not less than two inches in diameter, and for traps under other fixtures not less than one and one-half inches.

Sec. 8. 1. All underground sewers shall be laid in trenches, cut at a uniform grade, and on a hydraulic concrete base of four inches thickness.

2. All sewer pipes shall have a fall of at least one-half inch to the foot.

3. They shall be laid in straight lines. All changes in direction shall be made with curved pipes, and all connections with Y-branch pipes.

4. All connections of lead with iron pipes shall be made with brass thimbles, full size of iron pipe, and plumbers, wiped joints.

Sec. 9. 1. No vault, sink, cesspool or dry-well shall be in any way connected with the drainage system of any house.

2. All overflow pipes from tanks and cisterns shall be provided with traps as required in section six.

3. All pipes from sinks, wash-trays, etc., shall be provided with strong metallic strainers, the meshes not exceeding one-sixteenth of an inch in diameter.

Sec. 10. 1. Where water supply in not ample for proper flushing of water-closets, etc., the Inspector of Plumbing may, in his discretion, order the erection of a tank or cistern into which water may flow at night, or into which it may be pumped.

2. Cisterns or tanks erected for purposes described in the foregoing paragraph shall not have an overflow pipe connected with any drain, and water supply for domestic purposes shall not be drawn therefrom.

3. Means for thorough flushing of all soil pipes, drain pipes and water-closets shall be provided in every case.

Sec. 11. Sub-soil drains shall be provided wherever dampness of site of any proposed dwelling is known to exist.

Sec. 12. 1. The Health Officer shall be notified promptly, in writing, and upon blank forms to be provided for that purpose, when the plumbing work on any house is completed and ready for inspection.

2. The Health Officer shall direct the Inspector of Plumbing, immediately upon notification by the plumber, to proceed at once to inspect and pass upon the work, and all inspections shall be made promptly, not later than twenty-four hours after such notfication.

3. No part of the plumbing work of any house shall be covered, or in any manner hidden from view, until after such inspection has been made and a certificate of approval issued by the Inspector.

4. The Inspector shall promptly condemn and order removal of any defective material, or of any work done other than in accordance with the provisions of these regulations.

Sec. 13. Prosecutions for infringement upon the provisions of these regulations shall be made by information filed in the Police Court of the District of Columbia.

The Sanitary Conference at Chicago, Ill., June 29-30.

ABSTRACT OF PROCEEDINGS.—SMALL-POX, AND HOW TO CONTROL IT.

ILLINOIS STATE BOARD OF HEALTH, *Springfield, Aug.* 6, 1881.

To the Editor of the SANITARIAN: In compliance with the request of Dr. Rauch, I send you an outline of the meeting in Chicago, June 29th and 30th, and the discussion on small-pox. The meeting opened at the Grand Pacific Hotel, June 29th, and was attended by Drs. C. N. Hewitt and E. J. Davis, Minnesota; H. B. Strong and E. J. Reeves, Wisconsin; R. J. Farquharson, Iowa; O. W. Wight, Milwaukee; O. C. De Wolf, Chicago; E. L. Howard, Maryland; James A. Stewart, Baltimore; T. M. Stevens, Indiana; A. H. Briggs, Buffalo; Stephen Smith, New York; H. A. Johnson, Chicago; H. B. Baker, Michigan; J. M. Gregory, J. H. Rauch, Newton Bateman, R. Ludlam, A. L. Clark and John McLean, of the Illinois State Board. A communication from the New York State Board set forth that small-pox was widely spread through the chief ports of Europe, and that the prevalence of varioloid went to show that vaccination was less effectual than it was a year ago. The Board recommended a thorough inspection and vaccination at all European ports of departure, an increase of efficiency in the American quarantine system, and more thorough co-operation between State and National Boards.

Dr. Briggs said that all the cases in Buffalo were brought by immigrants—mostly Polish.

Dr. De Wolf said that immigrant trains were met thirty miles out by officers of the Health Department, and an inspection was made. He thought the only remedy was for the authorities of European ports to insist on every passenger producing a certificate of vaccination.

Dr. Hewitt, of Minnesota, said there had been eight outbreaks in that State.

Dr. Farquharson, of Iowa, stated that there had been twenty or thirty outbreaks in Iowa, all directly traceable to immigrants, and stopped by isolation.

Dr. Smith, of New York, declared the quarantine at New York City entirely inadequate. The method of vaccination in the city was praised, and the scare did some good by causing the vaccination of large numbers.

A committee was appointed to prepare a report and present resolutions.

This report takes note of the number of outbreaks in the last two years and the severity of them. Thinks this happens because people have become careless with regard to vaccination on account of immunity from it; sees the necessity of striking the alarm; states that immigration is the cause of it all; that it is not detected because of the rapidity of the ocean voyage; recounts the miserable accommodations for the sick on board the vessels, and the fact that vaccination is not practiced on them; also the aversion the immigrants have for vaccination. Proposes that it be governed:

(1). By making it obligatory for ship-owners to cause a medical inspection of immigrants when they embark, and vaccination of all found unprotected. Also inspection and disinfection of the baggage. For this purpose Congress should enact a law. (2). That the National Board of Health consider the propriety of making, promulgating and enforcing rules requiring the inspection, at the point of departure, of immigrants into this country, and their vaccination and re-vaccination. (3). That local authorities should, as far as practical, cause a thorough inspection of immigrants, vaccinating and detaining them when necessary. (4). That a committee, consisting of one from each State and local Board represented, be appointed, whose duty it shall be to take such other measures as it may find necessary to accomplish these resolutions.

This report was adopted. One or two objections were made by gentlemen who thought the disease not sufficiently prevalent to warrant the strong statements made.

The conference then adjourned *sine die*.

Respectfully yours, GEO. N. KREIDER.

STATE BOARD OF HEALTH OF MINNESOTA, *Red Wing, Minn., July* 9, 1881.

To the Editor of THE SANITARIAN: In any report you may give of the proceedings of the Sanitary Conference held in Chicago, June 29th and 30th, at the call of the Illinois State Board of Health, I ask that my remarks may be reported as follows:

As to the paper prepared by Dr. Stephen Smith, of the National Board of Health, and presented for adoption as the expression of the opinion of the Conference, I, with others, objected.

1st. That small-pox was not in any true sense epidemic in the North-Western States, nor, so far as the reports made to the Conference indicated, in any other Western State. Nor was it proven that the cases which had occurred were exclusively due to direct immigration. A reference to the statistics presented in that paper and by delegates, showed that more cases, as judged by the number of deaths, had occurred in the city of Philadelphia alone than in all the rest of the United States.

2d. That for such outbreaks of small-pox as had occurred, or were now existing in the West, the action of local and State Boards of Health, sustained, as they are, by enlightened public opinion, had

hitherto proved sufficient, and would be increasingly competent in the future.

3d. That vaccination and re-vaccination were of prime necessity, and should be urged upon residents and immigrants alike in every practicable way.

4th. That imported small-pox should be promptly met at ports of debarkation, and that to that end quarantine authorities should have the cordial and hearty co-operation of their respective State Boards of Health and of the National Board of Health.

In the discussion which was had on the paper, and the resolutions proposed, my position was—

That inter-State control of small-pox was alone practicable or legally possible by the co-ordinate action of the State and local Boards of Health directly interested, and that such action was easy and inexpensive.

As respects the management of small-pox among transient or settler immigrants in any one State, the local Board of Health and the State Board of Health of that State furnish all the machinery necessary, as has been repeatedly and abundantly proven in dealing with the existing disease in the Western States. The reports of delegates to the Conference were clearly to this point.

The functions of the National Board of Health as respects existing small-pox, were made subjects of discussion by the paper referred to, and in that regard I was unable to understand how it could act directly, except in efforts to secure *international* regulation, from which no one expected any help in the present case.

I believe it has a duty to local quarantine officers in giving them thorough and hearty co-operation, and avoiding carefully every act which will embarrass their work or diminish popular confidence in their efficiency.

As respects *inter-State* quarantine, I am unable to see what the National Board of Health can do, except to give, when asked, counsel and money to aid the State and local Boards, who have the real responsibility of determining what measures should be taken, and of carrying them into effect.

As respects existing small-pox, nothing was adduced which called for its aid either as adviser or treasurer.

I would not trouble you with this memorandum if I had been accurately reported by the local papers, or if I had not participated in the Conference in an official capacity—not an individual one. I ask, therefore, to be correctly reported respecting a matter in which, both as a citizen and a health officer, I am deeply interested.

Yours truly, CHARLES N. HEWITT,
Secretary of the State Board of Health of Minnesota.

Illinois State Board of Health.—The following resolutions on small-pox were unanimously adopted by the Illinois State Board of Health at its meeting on July 15th, 1881:

Resolved, That in view of the occurrence of small-pox in this State in epidemic form, through the dissemination of the contagion by immigrants arriving at the ports of the United States, the National Board of Health be, and is hereby respectfully requested to secure

the vaccination of all unprotected immigrants before they are allowed to leave the ports of arrival in this country.

Resolved, That the Illinois State Board of Health cordially approves the action of the Sanitary Conference held in Chicago on June 29th and 30th, for the prevention of the introduction of small-pox into this country by immigration, and its spread from one State to another, and will co-operate to the full extent of its power and means in the proposed effort to unite all health authorities in an organized plan of concerted operation to prevent the extension of this disease, and to secure general vaccination.

Resolved, That in accordance with the above, the State Board of Health respectfully and earnestly calls upon all health officers and local Boards of Health in this State to secure a careful inspection of all immigrants entering the State, and a prompt vaccination or revaccination of all persons not thus protected against small-pox.

At this meeting the Board passed on rules with respect to the transportation of corpses as follows:

1. The transportation of the bodies of persons who have died of small-pox, Asiatic cholera or yellow fever, is absolutely forbidden.
2. From November 15th to March 15th, all dead bodies may be transported without restriction, excepting the bodies of those who have died of diphtheria, scarlet fever, typhus or typhoid fever.
3. The bodies of those who have died of diphtheria, scarlet fever, typhus or typhoid fever, at all times, and all bodies presented for transportation, from March 15th to November 15th, must be closely wrapped in a disinfectant cerecloth, placed in a metallic or wooden coffin, and this enclosed by a tight wooden box.
4. Every dead body must be either accompanied by a physician's certificate, showing cause of death, or a certificate of inquest from the coroner, or a permit for transportation from the clerk of the local Board of Health, if any, and a written certificate from the shipping undertaker that the corpse has been prepared for transportation in accordance with the rules of the Illinois State Board of Health.

The Board is now actively engaged in prosecuting the advertising quacks, abortionists and specialists who infest Chicago. Several have already been convicted and sentenced, and the Board hopes to punish and rid the State of them.

Small-Pox in Michigan. — The Michigan State Board of Health continues to find small-pox a chief object of attention. At the last regular meeting of the Board, held at Lansing, July 12, Dr. Jacokes reported a case of it in an immigrant tramp burglar, while confined in the jail at Pontiac. He and another prisoner in the jail were removed to the temporary hospital. The prisoner stole the clothes of the immigrant, and, leaving his own, ran away. Some one then stole the prisoner's cast-off clothes and bedding after supposed disinfection, and by this means small-pox was communicated to more than sixteen persons. He also reported that a second immigrant brought small-pox near Pontiac, but the disease was restricted.

Dr. Kellogg reported that an immigrant sick with small-pox had recently been put off the M. C. R. R. train at Battle Creek. He remained about the depot all day before it was discovered he had small-pox. He was then removed to a tent-hospital.

Dr. Avery reported an outbreak of small-pox, apparently brought by an immigrant Dane, who was vaccinated and not sick himself, to a camp in Montcalm County. The immigrant slept with and gave the disease to a countryman, who was vaccinated before his arrival in this country, six years ago. The disease was light, the man not being confined to his bed at all, and finally he went to a family of five unvaccinated persons, all of whom had the disease lightly. There were other cases in the neighborhood coming from the same source. The immigrant probably brought the contagium in his clothing from some infected city or immigrant on the journey, as he said there was no small-pox on board the ship on which he came, though there were cases of diphtheria.

Dr. Lyster read a translation of two important papers recently published in France, on the *causation of certain communicable diseases*, which gave details of successful methods of making viruses, which can be used in vaccination, and are effective in preventing deaths from these diseases.

Dr. Baker had paid some attention to the same subject in connection with diseases of animals, affecting the public health. He mentioned a paper by Prof. Law, of Cornell University, suggesting that these protective viruses all seemed to be made in accordance with a general law, namely, by their cultivation in fluids with access of free oxygen, and this gives us great hope of soon being able to make protective vaccination for many of the most dangerous diseases in animals and mankind.

The State Board of Connecticut reports, for the month of June, the unusual prevalence of scarlet fever, and of a severer type than has appeared for some time. Special attention has been called to a localized epidemic at Pequonnoc Bridge, near Mystic, in which village there have been twenty or more cases and several deaths. The prevalence of the epidemic has been attributed to birch brush placed in the river for the cultivation of oysters at the outlet of the river, where the tide makes the water brackish.

Malarial fevers were increasing and gradually extending over the State. The only general features that appear to influence it are the rivers, along whose valleys it extends and spreads from right to left with greater frequency in the valleys and the coast line along which it extends and spreads inland.

The excitement concerning small-pox has pretty clearly disap-

peared. The increased attention to vaccination has been one gratifying result of this outbreak of small-pox.

The North Carolina Board, recognizing the widespread interest of the public in the rumored frequent adulteration of food-substances and drugs, desires to give every facility to detect adulterations or quiet unfounded suspicions. And to this end the Secretary has distributed circulars to the Superintendents of Health throughout the State, requesting them to forward packages of cooking soda, saleratus, baking powders, cream of tartar, syrup, sugar, butter, milk, flour, vinegar, liquors, etc., to Dr. Chas. W. Dabney, Jr., at the Agricultural Laboratory, at Chapel Hill, for analysis.

The California State Board reports, for the month of June, an increased prevalence of, and mortality from diphtheria, the annual death-rate per 1,000 rising from 0.08 to 0.28. The difference is due to the occurrence of several cases, with deaths, at Sacramento. The malarial fevers and typhoid fever show a diminished mortality. From Grass Valley, Dr. Jones reports typhoid fever and diarrhœa to be of frequent occurrence. In Sacramento, while still frequently occurring, these diseases are less observed than during the previous month.

The State Board of Health of N. Y.—Among the most important acts of the session of the Legislature of N. Y., recently adjourned, were the passage of the bill to prevent the adulteration of food and drugs; the amendment of the act for the preservation of the public health, and the conferring of increased powers and duties on the State Board of Health. These acts it is our purpose to publish entire, before long.

The State Board of Health is required to take cognizance of the interests of health as they relate to the sale of food and drugs, and the adulterations of the same. For this purpose it has undertaken the necessary investigations, and appeals to the people of the State for information and suggestions that may lead to the correction of wrong practices which this law is designed to prevent. In the exercise of this duty, it seems almost needless to remark that every individual in the State will promote his own interests by the constant exercise of a watchful effort to strengthen the hands of the Board of Health. To facilitate this, and other sanitary work, the law directs the formation of local Boards of Health throughout the State, and we are glad to notice that under the active assistance of Dr. Harris, Secretary of the State Board of Health, the time is not distant when every town and village in the State will have an active Board of Health in co-operation with the State Board, to take cognizance of, and proceedings against all causes and conditions dangerous to the public health.

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending July 16, 1881. **Abbreviations**: c, consumption; a l d, acute lung diseases; s f, scarlet fever; ms, measles; w c, whooping cough; d-c, diphtheria and croup; t f, typhoid and typhus fevers; s p, small pox; y f, yellow fever; ch, cholera; dl d, diarrhœal diseases; ml f, malarial fever; c d, contagious diseases.

Atlanta, Ga., 37,421: 22; 18; 30.3.—dl d, 9.
Baltimore, Md., 332,190: 237; 130; 36.8.—dl d, 70; d-c, 6.
Boston, Mass., 362,535: 143; 55; 20.6.—c, 25; dl d, 19; d-c, 8.
Brooklyn, N. Y., 566,689: 430; 292; 39.6.—dl d, 194; d-c, 18; s f, 11.
Buffalo, N. Y., 155,137: 108; 69; 36.3.—dl d, 30; s f, 5; d-c, 3; a l d, 8.
Cambridge, Mass., 52,800:
Camden, N. J., 41,658: 32; 23; 40.1.—dl d, 18.
Charleston, S. C., 49,990: 44; 19; 45.9.—s f, 5; t f, 2; ml f, 2.
Chicago, Ill., 503,304: 440; 325; 45.6.—dl d, 149; d-c, 10; t f, 4; s p, 15.
Cincinnati, O., 255,708: 583; 193; 108.56.—Sunstroke, 264; excessive heat, 150; dl d, 102.
Cleveland, O., 160,140: 158; —; 52.0.—dl d, 83; d-c, 3; t f, 2.
Dayton, O., 38,677: 68; 29; 91.0.—dl d, 19.
Dis. Columbia, 180,000: 112; 53; 32.4.—dl d, 30; c, 18.
Evansville, Ind., 29,280: 25; 10; 44.3.—dl d, 6.
Fall River, Mass., 49,000: 25; 14; 26.6.—
Hudson Co., N. J., 187,950:
Indianapolis, Ind., 75,074: 77; 33; 53.5.—dl d, 22.
Kansas City, Mo., 60,000:
Lawrence, Mass., 39,178: 6; —; 8.0.—
Louisville, Ky., 123,625: 123; 54; 51.9.—s p, 1; dl d, 28; t f, 3; ml f, 4.
Lowell, Mass., 59,485: 37; 20; 32.4.—dl d, 7.
Lynn, Mass., 38,284: 13; 5; 17.7.—
Memphis, Tenn., 33,593: 34; 16; 52.8.—dl d, 4; ml f, 2; t f, 1.
Milwaukee, 115,578: 64; 43; 28.9.—dl d, 8; ml f, 1; s f, 2.
Mobile, Ala., 31,205: 28; 12; 46.8.—dl d, 4; c, 4.
Nashville, 43,461: 29; 9; 34.8.—dl d, 5; t f, 1; ml f, 1.
Newark, N. J., 136,400: 85; 60; 32.5.—dl d, 30; t f, 2; s f, 4.
New Haven, Conn., 62,882:
New Orleans, La., 216,140: 125; —; 30.2.—dl d, 21; c, 20; ml f, 7; t f, 2.
New York, 1,206,577: 990; 624; 42.8.—dl d, 370; t f, 8; s p, 6; s f, 34.
Omaha, Neb., 30,518: 21; 12; 35.7.—dl d, 8.
Peoria, Ill., 34,850: 16; 7; 28.5.—dl d, 7.
Philadelphia, Pa., 846,980: 477; 274; 29.4.—s p, 14; t f, 4; s f, 6.
Pittsburg, Pa., 156,381: 134; 75; 44.8.—s f, 4; dl d, 29; s p, 10; t f, 7.
Portland, Me., 33,810: 17; 5; 27.2.—
Providence, R. I., 104,852: 39; 21; 19.0.—
Richmond, Va., 63,803: 51; 26; 41.7.—dl d, 19; s p, 3; t f, 2.
Rochester, N. Y., 89,363: 54; 25; 31.5.—dl d, 12; d-c, 11.
San Francisco, Cal., 233,956: 72; 25; 16.1.—
Savannah, Ga., 30,681: 22; 7; 40.4.—ml f, 2; dl d, 4.
Springfield, Mass., 33,340: 20; 8; 31.3.—
St. Louis, Mo., 350,522:
Utica, N. Y., 33,913:
Wilmington, Del., 42,499: 44; 21; 54.1.—dl d, 14; s p, 6.
Worcester, Mass., 58,295: 16; 6; 14.3.—

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at latest weekly returns received.

Alexandria, Egypt, 220,000, July 2, 127; 31.2.—t f, 12; dl d, 26.
Amsterdam, Holland, 326,203, July 9, 131; 20.9.—
Antwerp, Belgium, 173,643, June 25, 77; 22.4.—s p, 2.
Barcelona, Spain, 260,000, July 9, 156; 31.2.—dl d, 17.
Belfast, Ireland, 174,412, July 16, 78; 19.5.—s p, 1.
Berlin, Germany, 1,123,577, July 9, 1023; 47.3.—s p, 1; t f, 33; dl d, 435.
Birmingham, England, 400,680, July 16, 156; 20.2.—
Bombay, India, 644,405, June 21, 395; 31.9.—t f, 106; cholera, 12.
Bremen, Germany, 112,200, July 9, 42; 19.2.—
Breslau, Germany, 273,000, July 16, 232; 47.6.—dl d, 60.
Bristol and Clifton, England, 217,185, July 16, 72; 18.1.—
Brussels, Belgium, 165,366, July 16, 91; 28.7.—dl d, 19.
Bucharest, Roumania, 200,000, July 9, 73; 19.0.—s p, 27.
Buda-Pesth, Hungary, 370,370, July 9, 252; 35.4.—s p, 6.
Calcutta, India, 429,535, June 11, 159; 19.3.—s p, 4; cholera, 8.
Christiania, Norway, 120,000, July 16, 27; 11.7.—
Copenhagen, Denmark, 235,254, July 12, 104; 23.0.—
Dresden, Saxony, 220,216, July 9, 110; 26.1.—
Dublin, Ireland, 333,401, July 16, 144; 22.0.—
Edinburgh, 233,666, July 16, 75; 17.0.—
Genoa, Italy, 180,625, mo. of March, 416; 27.6.—s p, 3; t f, 27.
Glasgow, Scotland, 601,266, July 16, 195; 19.8.—
Havana, Cuba, 195,437, July 22, y f, 120 cases, 21 deaths.
Lisbon, Portugal, 225,152, June 25, 105; 26.8.—t f, 3.
Liverpool, England, 549,834, July 16, 298; 28.1.—s p, 2; ms, 25; s f, 10.
London, 3,707,130, July 16, 1,816; 24.7—s p, 49; dl d, 311; ms, 73; s f, 53.
Lyons, France, 342,815, July 9, 223; 33.8.—s p, 4; t f, 5; s f, 5.
Madras, India, 397,552, May 20, 268; 35.0.—s p, 37.
Malaga, Spain, 115,882, July 10, 118; 53.0.—s p, 1; dl d, 17.
Montreal, Canada, 135,000: July 16, 117; 43.6.—t f, 5.
Munich, Germany, 230,000, July 9, 147; 33.2.—dl d, 29; s f, 4; d-c, 3.
Paris, France, 1,988,806, July 13, 858; 26.2.—t f, 28; dl d, 115; d-c, 37.
Rio de Janeiro, Brazil, 330,000, May 31, 402; 44.5.—s p, 1; d-c, 8.
Rome, Italy, 305,469, June 18, 147; 25.0.—t f, 4; d-c, 5.
Stockholm, Sweden, 169,429, July 9, 66; 21.1.—
St. Petersburg, Rus., 669,741, July 9, 760; 59.0.—s p, 4; t f, 157.
Trieste, Austria, 128,295, June 25, 72; 26.5.—
Turin, Italy, 236,658, June 18, 137; 29.6.—s p, 1; t f, 4.
Venice, Italy, 141,615, July 9, 67; 24.4.—s p, 2.
Warsaw, Rus. Poland, 357,169, June 25, 166; 22.8.—s p, 2.

A particularly noticeable feature in the foregoing tables, is the relatively high death-rate of the cities in the United States, in comparison with foreign.

The six healthiest cities in the United States, as measured by the above and most recent authentic reports, up to the time of going to press with this number, were, in the order named:

Lawrence, Worcester, San Francisco, Lynn, Providence and Boston.

The most unhealthy: *Dayton, Wilmington, Indianapolis, Memphis, Cleveland* and *Louisville.* Cincinnati is not named in this category, because the mortality of the week was specially exceptional by sunstroke.

The healthiest foreign cities were: CHRISTIANIA, EDINBURGH, BRISTOL AND CLIFTON, BUCHAREST, BREMEN and BELFAST.

The unhealthiest cities in the world were: *Dayton, St. Petersburgh, Wilmington, Indianapolis, Malaga* and *Cleveland.*

New York, and all who summer Long Islandward, by way of Hunter's Point, are still pinching their noses against the abominable stenches of Newtown Creek and vicinity, notwithstanding the investigation of the State Board of Health and invocation of the Governor in April last, for their abatement. But of New York and her health authorities, it may be truly said, while they twist their noses in one direction they row in another. They continue to discriminate between the emanations from the stench factories on the Brooklyn side of Newtown Creek, and their own foul city dirt deposits on the Queens county side—still nearer the railroad—and particularly disgusting to the thousands of people who have to pass this ordeal to reach the country resorts.

Harper's Weekly is engaged in an artistic enterprise of rendering the stench visible, but makes the mistake of taking the landscape of the Kings county side of the creek from a standpoint in the very midst of the most disgusting emanations. Most of the stench proceeds from the banks and adjacent marshes of Newtown Creek on the Queens county side, filled in and *kept in repair*—the stenches, we mean—by the New York contractors who find here a place of deposit for city dirt. Brooklyn has contributed in the same way to these foul odors, but not recently, and even for a time discharged some of her sewers into the marshes on the Kings county side, the foul emanations from which are yet far from being exhausted. We took occasion to call the attention of the State board committee to these facts, as published in our April number, and in conjunction with the assurances of Professor Chandler, that sludge acid was no longer used, but which, (?) it seems, is now again detectable through the effects of summer heat on the New York city dirt deposits.

Of the same character, but with less stench, is an abandoned marshy section of the Chemung canal, which has also been the subject of investigation by a committee of the State board of health, and report to the Governor. On the testimony of physicians in the neighborhood—as at Long Island City—"the amount of sickness described is appalling, no family escaping the invasion of malarial diseases for a distance of two miles along the borders of the old canal, even chil-

dren at breast becoming purple and shaking with the cold stage of intermittent." The chief difference is, that the sickness caused by the New York and Brooklyn deposits on the Newtown Creek marshes, are scattered among over a million of people thereabouts, and therefore, less easily traced, but unquestionably swelling the mortality lists to a terrible and increasing extent.

New York Water Supply.—A pamphlet report of fourteen pages to Hubert O. Thompson, Commissioner of Public Works, by Isaac Newton, Chief Engineer, with opinion of E. S. Chesbrough, Consulting Engineer, is worthy the attention of all persons who have the welfare of New York at heart. That New York has outgrown her present means of water supply is generally understood by most of her intelligent citizens, but it is to be feared that very few of them have given the subject that serious consideration which it demands. The overtaxed single aqueduct is constantly subject to a strain so dangerous, that one is almost tempted to turn from it in horror at the calamity which would overtake the people should it burst; and yet this is the condition involved!

The laconic conclusion of Mr. Chesbrough, that he has studied the subject carefully for upwards of a month, and concurs with Mr. Newton in his statements and recommendations: *above all, in reference to the great importance of beginning, as soon as practicable, the construction of a new aqueduct,* deserves to be impressed upon every citizen.

Animal Vaccination. — *The International Medical Congress* closed its session, Aug. 9. One of the most noteworthy subjects which engaged the attention of the Congress was Professor Pasteur's account of his recent researches in, and practice of animal vaccination. Professor Pasteur has done, as Sir James Paget explained in thanking him, in the name of the Medical Congress, for his address, for the lower animals what Jenner did for the human race. France, says Professor Pasteur, loses every year by splenic fever animals to the value of 20,000,000f. In the course of his remarks the eminent Frenchman said:

"I was asked to give a public demonstration of the results already mentioned. This experiment I may relate in a few words. 50 sheep were placed at my disposal, of which 25 were vaccinated. A fortnight afterward the 50 sheep were inoculated with the most virulent anthracoid microbe. The 25 vaccinated sheep resisted the infection; the 25 unvaccinated died of splenic fever. Within fifty hours since that time my energies were taxed to meet the demands of farmers for supplies of this vaccine. In the space of twenty-five days we have vaccinated in the departments surrounding Paris, more than 20,000 sheep and a large number of cattle and horses. If I were not pressed for time, I should bring to your notice two other kinds of virus, at-

tenuated by similar means. These experiments will be communicated by and by to the public. I cannot conclude without expressing the great pleasure I feel at the thought that it is as a member of an International Medical Congress, assembled in England, that I make known the most recent results of vaccination upon a disease more terrible, perhaps, for domestic animals than small-pox is for man. I have given to vaccination an extension which science, I hope, will accept as a homage paid to the merit and the immense services rendered by one of the greatest men of England. I refer to Jenner."

Literature.

District of Columbia, Health Officer's Report, for the year ending June 30, 1880, does much credit to the Health Officer, Dr. Smith Townsend, by its directness of purpose, which at once attracts and fixes attention to the subject in hand. The reader feels that he is not reading a handbook prepared for the student of hygiene or the busy practitioner, but what relates strictly to the department of which this volume is the official report.

Dr. Townsend is well known to be among the pioneers in the work of securing legal enactments and regulations for the proper construction and government of house drainage and plumbing work. To this end, he had a bill introduced in Congress more than a year ago, which, we are glad to learn (since the issue of the volume before us), became a law early in the current year, and that "Regulations Governing Plumbing, House-Drainage and the Ventilation of House Sewers," have already been formulated, and were to go into effect June 15th, greatly to the prospective benefit of the people of the District. Under the head of Small-pox, the following remarkable case is cited:

"A colored man had been six weeks an occupant of Providence Hospital, undergoing treatment for pulmonary consumption in an advanced stage, was reported as afflicted with what gave suspicion of being a variolous eruption. Examination proved that the suspicion was well founded, and on the day following he was removed to the small-pox hospital, where, on the 6th of the month following, he died. The closest scrutiny and most careful investigation failed to reveal any means whereby the man might have become infected. He had come to the hospital from a country district in Virginia, where small-pox is almost unknown. His location in the building was an isolated

ward, in an upper story, and not the slightest ground for any theory of communication of the infection by contact from outside could be traced. No other case had for years before, nor is any known since, to have occurred in the institution."

The subject of "Vital Statistics" affords some very interesting facts. The population is 118,236 whites, and 59,402 colored. Total deaths among whites, 2,085, making about 17.37 per 1,000. Total deaths among colored population, 2,121; annual death rate, about 35.35 per 1,000. The total number of deaths was 4,207, giving an aggregate annual death rate of 23.37 for the whole population. This report shows not only an improvement in the health, as compared with 1879, but also in the means for preserving the health of the city. The report for 1879 gave a detailed account of the condition of the public schools of the city, and transcribed from THE SANITARIAN, for July, 1879, the excellent rules given for the management of schools and the changes to be made in regulating the attendance and the studies of pupils. T. P. C.

The Index Catalogue of the Library of the Surgeon-General's Office, U. S. A. Authors and Subjects. Vol. II.—Berlios-Cholas, 4to, pp. 990. Washington: Government Print.—This second volume of the greatest work of medical literature ever published, includes 12,459 authors' titles, representing 4,934 volumes, 9,810 pamphlets, with 11,550 subject titles of separate books and pamphlets, and 37,310 titles of articles and periodicals. It has been compiled under the direction of the progressive work of Lt.-Col. and Surgeon John S. Billings.

Manchester Health Lectures.—*Beverages: Water, Tea, Coffee, Cocoa, etc.* By W. J. Sinclair, M.A., M.D., Hon. Physician to the Manchester Southern Hospital for Women and Children.

Sick Nursing Among the Poor. By C. J. Cullingworth, M.R.C.P., etc., Surgeon to St. Mary's Hospital, Manchester, etc.

Clothing. By John Haddon, M.A., M.D.

These are little unbound tracts, of from sixteen to twenty-four pages each, comprehending much useful information in small space, and worthy of the widest possible distribution. Price, one penny each. Manchester, England: John Heywood.

Hygiene and Treatment of Catarrh, Part II.,* completes the work, Part I. of which we had occasion to notice a little less than

* Hygiene and Treatment of Catarrh: Therapeutic and Operative Measures for Chronic Catarrhal Inflammation of the Nose, Throat and Ears. 40 Illustrations. Part II., 12mo, pp. 315. By Thomas F. Rumbold, M.D. St. Louis: Geo. O. Rumbold & Co.

a year ago (Vol. VIII., p. 525): the first part dealing more particularly with preventive measures, and such curative means as depend upon personal care; and the second with therapeutic and operative measures. But both parts are very plainly written, and although intended more especially for medical practitioners, the work is unusually well adapted to the comprehension and profit of laymen, who may learn from it many useful lessons for the prevention, and proper course to pursue for getting rid of one of the most common and troublesome of diseases.

Disinfectants.—Dr. Geo. M. Sternberg, U. S. A., in his experiments with disinfectants (N. B. of Health *Bulletin* Vol. 3, No. 4,) confirms the conclusions of Dr. John Dougall, of Glasgow, published in THE SANITARIAN six years ago (Vol. 3), that of all the substances in common use, carbolic acid is among the *least* efficient. This has frequently been pointed out in these pages, while its use has been persisted in, and still is, to some extent, by health authorities, as a substitute for cleanliness. The conclusion reached by Dr. Sternberg is, that chlorine, nitrous acid, and sulphurous acid are reliable disinfectants in the proportion of 1 volume to 100 of air. Smaller proportions, he thinks, might be sufficient in an atmosphere saturated with moisture. Moisture, no doubt, greatly contributes to the efficiency of chlorine, on account of the facility with which it decomposes water and sets free the oxygen, as practiced by Professor Doremus in the disinfection of the steamship *Atlanta* and Bellevue Hospital.* But we are inclined to think that in the use of the acids, the presence of moisture—except, perhaps, that which may be confined to the actual thing to be disinfected or destroyed—does not add to, but, on the contrary, impairs the efficiency; inasmuch as sulphurous acid is largely absorbed by moisture, and nitrous acid is decomposed by it. These conditions suggest, therefore, that in the presence of moisture, the proportions of sulphurous and nitrous acids, when used as disinfectants, should be increased.

The Asylums of Europe, by George M. Beard, M.D., etc., an essay read before the meeting of the National Association for the Protection of the Insane, November 11, 1880 (reprint from *Boston Medical and Surgical Journal*), shows that there is much to be learned in this country on the general management of the insane—that in England, Germany and France, in the order named, asylums for the insane are superior in systematic organization, supervision and medical superintendence, to asylums in the United States.

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* Epidemics from a Chemical Standpoint: THE SANITARIAN, Vol. 7, pp. 308–318.

Lippincott's Magazine for August is a capital number. The illustrated articles are: "A Glimpse of the Cumberland Border," by Miss Rose Kingsley, daughter of the late Canon Kingsley; "The Home of the Giant Squid," by C. F. Holder, which is a nautical piece, with the breeziness of the ocean and the flavor of salt spray; and the continuation of Dr. Oswald's entertaining series on "Zoological Curiosities." "New Ground," by S. M. A. Collins, is a graphic sketch of field-life on a Tennessee tobacco plantation. "The Pension Office" and "New York's Fresh-Air Fund" are full of noteworthy details; "On the Wrong River," by C. F. Johnson, Jr., is on an exciting adventure in the Adirondacks; and "Housekeeping in North Carolina" is a bit of personal domestic experience. "Captain Put's Novel," by Susan B. Long, and "Santa Lucia," by J. D. J. Kelley, are effective and well-constructed stories. "Craque-o'-Doom" is brought to a conclusion, and is to be followed by a new serial, by Sherwood Bonner, which will begin in the September number and run to the close of the year.

Littell's Living Age continues to show from week to week the full significance of its name. It contains the choicest selections of European periodical literature. The foremost writers of the time on philosophy, science and general literature are represented in its pages. Weekly—producing four large volumes a year. $8.00. Boston: Littell & Co.

Harper's for August, is magnificent. Frontispiece—Illustration for "Almond Blossom," a Poem; "The Surrender of Cornwallis," H. P. Johnson, with fifteen illustrations; "A Day in Africa," T. B. Aldrich, with six illustrations; "The White Mountains," with sixteen illustrations, *and so forth.* The September *Harper* will contain an article by Prof. Herbert Tuttle, of Cornell University, entitled "The German Empire." It will enter minutely into the functions of the German Government in its numerous departments.

Scribner's for August, is peculiarly attractive and select for "Midsummer" reading. "The Isle of Peace," is the signification of Aquidneck, the old Indian name of Rhode Island, on which the town of Newport is built. Among the illustrations is a view of "Whitehall," Bishop Berkeley's Residence for three years on the Island, and there is also a pleasing sketch of his life while there, and a sufficient allusion to Sir Robert Walpole, that treacherous Minister of a treacherous Court. There is genuine wit in the story of "The Village Convict," by C. H. White.

The Century Company, successors of Scribner & Co., has taken

the fifth floor of the handsome new building on the north side of Union Square. The editorial rooms of the *Century* (Scribner's) and *St. Nicholas* will be in the Angle L.

The International for August, is, as usual, full of good reading. "Reminiscences of Thirty-first Congress," the Congress which had Webster, Clay, Calhoun, Benton, Cass, Douglass, Seward, Chase, Davis of Mississippi, Hale, Ewing, Corwin, Hamlin, Butler, Houston, Mason, Thaddeus Stevens, Winthrop, Cobb of Georgia, McDowell, Giddings, Preston King, Horace Mann, Toombs, Alexander H. Stevens and Vinton, for members, by George W. Julian. "College Graduates in the Ministry," by Chas. F. Thuding; "An American Bonaparte," by Eugene L. Didier. Waldorf H. Phillips, author of the satire "Who's Your Wife?" expounds still more freely the "Divorce Question." "Rights," by David A. Wasson, is full of vigor, and clears up some hitherto confused doctrines. "Some Curiosities in Horological Reckoning," by W. F. Mappin, is a good illustration of the progress of the world since Captain Cook first undertook to *cross* it; and "Why Ireland has been Misgoverned?" by a Celt, should satisfy the most extravagant expectations of any one number. A. S. Barnes & Co.: NewYork.

Publications Received.—Henry's Cartwright Prize Essay; New York Infant Asylum Report, 1880; Wisconsin State Board of Health Report, 1880; Commercial Relations of the United States—Reports from the Consuls on Commerce, Manufactures, etc.—No. 3; Dengue—J. G. Thomas, M.D.; Hip-Joint Disease—De Forest Willard, M.D.; Fifty Years of Freedom in Belgium—Bureau of Education Report; Seaside Sanitarium—West Side Relief Association Report, 1880; Ether Death—John B. Roberts, A.M., M.D.; Indigenous Malarial Diseases in Wyoming Valley—John B. Crawford, M.D.; Intracranial Myxo-Sarcoma—O. D. Pomeroy, M.D.; Favus—L. Duncan Bulkley, A.M., M.D.; Report of Medical Officer of Health for the Port of London, to Dec., 1880; Glaucoma, caused by Mental Worry—Leartus Connor, A.M., M.D.; Stenosis of the Larynx—W. H. Daly, M.D.; Amherst College's Twenty Years' Experience in the Department of Physical Education, etc.—Prof. Edward Hitchcock; Coulson's Diseases of the Bladder—Wm. Wood & Co.; Charcot and Loomis' Diseases of Old Age—Wm Wood & Co.; Duhring's Atlas of Skin Diseases, Part IX—J. B. Lippincott & Co.; Sanitary Care and Treatment of Children and their Diseases, by Drs. Garrett Anderson, Busey, Jacobi, Meigs, and J. Lewis Smith—Houghton, Mifflin & Co.

THE SANITARIAN.

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THE PROGRESS OF SANITARY PROTECTION AT NEWPORT, R. I.

No. III.—Impure Water, Cesspool and Privy Vault Dangers.

By Dr. Horatio R. Storer.

(*Continued from p.* 392.)

This being the actual condition of the public health at Newport (as stated in the numbers of this Journal for August and September), what could be done to remedy it? Obviously the most important steps for protecting the health of a city should be taken by its city government. What these steps ought to be in the case of Newport had long been known by its authorities, as is shown by the inaugural addresses that have been quoted from successive mayors for a dozen years. The water of Easton's Pond had reached the interior of the city, and now its use must be adopted in the school-houses and other public buildings, and hydrants must be placed for sprinkling the streets with pure water, instead of with sewer water from the harbor, and for drinking fountains, and for supplying the needs of the very poor, as well as for subduing fires. The sewers had been acknowledged unfit for their purpose, old ones were to be repaired if possible, new ones to be built, and all in conformance to a general and well arranged plan, which as yet did not exist. Measures were to be taken to lower the soil-water of the town, and thus drain many wet cellars; to arrest the communication of contagious and infectious disease; to ensure the repair of defective cesspools and the removal of disused ones; to close from access polluted wells; and other precautions were to be observed that the occasion might from time to time demand, but which could not be done save under the direct authority of the law. For the accomplishment of it all there existed every requisite statutory power. The authorities persisted, however, in evading each question, upon the plea that in doing nothing at all they were abreast of public opinion. Public opinion was therefore to be brought to a higher level, and the recal-

citrant authorities were to be induced to obey the laws of the State. Could this be done by any one individual, or by anything short of a well defined and powerful organization of citizens? All attempts short of this had steadily proved futile.

A more explicit statement of what Newport has pretended to do for the public health is here in point, even at the seeming risk of repetition; I have already intimated the outline. Its aldermen, generally "practical" men of the town, are the nominal Board of Health, meeting together for the purpose from twelve to no times each year, according to the general impulse of the period. Under their direction there are an "overseer of small-pox" (the present incumbent is a blacksmith by trade); an "inspector of nuisances" (he who now holds this office is a tinsmith); a "health officer" (a most estimable seaman by profession); a "port physician," who, though required by the city ordinances to be annually appointed,* has for several years existed only in name; a "city physician," who, it would seem, has only to vaccinate, or to inspect for the signs of vaccination, when specially required by the city to do so, for admission to the public schools is obtained by "the certificate of some (any other) practicing physician,"† —to go to the police station and jail when sent for (the almshouse has a separate attendant), and to attend such paupers at their homes as he may be intermittently notified to see by the Mayor and Board of Aldermen.

Though so sparingly careful of the public health, Newport has no hesitation in providing offices and salaries in other directions for a host of retainers, all of them no doubt very useful indeed, and absolutely necessary for the public welfare. There are a sealer of weights and measures; an inspector of kerosene; a surveyor of highways (separate from four city surveyors of land, and from the street commissioner, and from the annually appointed committee on streets and highways); a superintendent of public parks (separate from four district committees for as many isolated "parks" and squares, the largest of which but little exceeds in size the playground of an ordinary school); two surveyors of round timber and spars; five surveyors and measurers of lumber; four coroners; a city crier; a fence viewer; a pound keeper; two bell ringers; a keeper of the powder house; a keeper of the city clocks; a keeper of the Jewish synagogue; an overseer of sand and gravel at Fort Wolcott; six superintendents of the building of chimneys and placing stoves and stove pipes; a constable to enforce the dog-law (it has been estimated at the City Hall that during the past year there were five hundred unlicensed dogs in Newport); two beach constables; a constable for the protection of birds; a gate-keeper at Poplar, Elm and Fourth Streets (R. R. crossings, that should belong rather to the private corporation than to the city to guard); a commissioner of Rhode Island bridge; two measurers of grain, salt, shorts and sea-coal; an inspector of hides and leather; a sealer of leather; a weigher of cotton;

* "The Board of Aldermen shall appoint a physician who shall be called the port physician," etc. Laws of the State of Rhode Island relating to the City of Newport, and Ordinances of the City. Published by the City. Newport, 1879; p. 155.

† Ibid, p. 159.

an inspector of hops; a gauger of casks; thirteen weighers of coal; a packer of fish; nine corders of wood; sixteen auctioneers; eleven undertakers; an inspector of milk; three weighers of neat cattle; an inspector of saleratus and bi-carbonate of soda; and two field drivers, to say nothing of minor officials.

Certain of these public officers bear a certain relation, in their duties, to the preservation of the public health. The inspector of kerosene, of milk, and of saleratus and bicarbonate of soda (for these, though separate offices, are now held by a single individual), is also the city sealer; he was formerly a mill superintendent. Of the four coroners, one is an assessor of taxes (formerly a grocer), another a physician (unfortunately not in fellowship with the American Medical Association), another an auctioneer and commission merchant, and the other an attorney. Appropriate evidence of the "healthfulness" of Newport is to be found in the fact that, with the eleven undertakers there are twenty* resident regular physicians in active practice, besides several others equally active though not admissible to the list, and at least nine druggist's establishments, of which several are very extensive, and all of these persons are presumed to gain their living from a population, according to the census of 1880, of less than sixteen thousand. In this connection attention may be called, without further comment, to the evidence recently given to the State Board of Health, concerning the open sale of poisonous drugs. Testimony offered by Dr. Francis H. Rankin, a single one of the twenty recognized Newport physicians, reveals no less than thirteen cases of habitual opium drunkards. "In a rough estimate these thirteen opium eaters," says Dr. Rankin, "use over thirty-four thousand grains of opium each month. Only one druggist in Newport refuses to sell opium to known opium eaters." This statement does not include "many others who obtain the drug from outside sources, and three, not included in the thirteen, who have been using for years compound prescriptions containing opium."†

Under these circumstances the Sanitary Protection Association of Newport was formed in the autumn of 1878. Its peculiar plan and its definite purposes have repeatedly been described, and are now familiar to most American sanitarians.‡

At the first meeting subsequent to organization of the Association, and the choice of an Inspecting and Consulting Engineer, Nov. 11, 1878, the general insalubrity of Newport wells was discussed, and how best to obtain reliable analyses of them at a reasonable price. The subject was referred to a committee, who addressed several known experts, asking their opinion upon the following points:

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* Communication of Dr. Samuel W. Francis to the National Board of Health, before cited.

† Second Annual Report R. I. State Board of Health, 1880, p. 195.

‡ The new "Protective" Principle in Public Sanitation, THE SANITARIAN, March, 1879; Newport Sanitary Protection Notes, Public Health, N. Y., August, 1879; The New Principle of "Protective" (Private) Sanitation in its Relations to Public Hygiene, Trans. American Medical Association, 1879; Sanitary Protection at Newport, R. I. (a paper before American Public Health Association at New Orleans, December, 1880), THE SANITARIAN, May, 1881, etc.

1. Whether there are any ready, though rough, tests of the kind, that are at all to be relied upon for establishing the single question of suspicion.

2. Whether, should more perfect tests be really and always required, the cost of making them must necessarily be great.

The committee alluded, moreover, to the rules given by Medical Inspector Gihon, in his Governmental Manual for the Navy,* by which "good potable water should be limpid, temperate in winter, cool in summer, of an agreeable taste; it should not curdle a standard solution of soap, nor deodorize a standard dilute solution of potassium permanganate, nor give more than a faint white precipitate, insoluble in nitric acid, with silver nitrate, barium chloride, and ammonium oxalate."

At the second meeting, Nov. 25th, letters in response were read from Prof. Wm. B. Rogers, of the Massachusetts Institute of Technology, Profs. J. P. Cooke, Jr., Wolcott Gibbs, and Francis H. Storer, holding chairs of chemistry in Harvard University, the first three of whom are summer residents of Newport; Prof. H. M. Field, M.D., of Dartmouth College; Drs. H. I. Bowditch and C. F. Folsom, of the Mass. State Board of Health; and Chas. H. Fisher, of the State Board of Rhode Island. As these letters are intrinsically of importance, and may be of assistance to similar societies elsewhere, under similar circumstances, extracts from them are now given.

Prof. Gibbs said: "I know of no simple and ready test for the purity of potable waters. The inorganic constituents of these—lime, chlorine, etc.—are of little importance. Albuminoid matters must be sought for and determined with the greatest care, and, unfortunately, the inquiry is not easy, nor are chemists agreed as to the best methods to be pursued."

Prof. Cooke could "only write briefly:

"First, That although the rules you quote may be very safe instructions to navy officers, they are, in my opinion, too sweeping if applied to local water-supplies. They would rule out, for example, all the water of Newport, as actually happened this summer. The water is undoubtedly unfit for storage on shipboard; but, unless contaminated, is healthy enough for ordinary use.

"Secondly, That the question demands not only chemical knowledge, but also experience and common sense, and that no rules can be laid down which could be blindly followed with safety.

"Lastly, That this subject is one which has almost become a specialty in the department, and that a young chemist, corresponding in position to a house physician or surgeon in a hospital, would require a special preparation for the work."

Prof. Storer said: "It would probably be possible to devise a rough and ready test for polluted wells; but comparatively little would be gained thereby, in my opinion, since a judicious person would be needed to apply the test any way, and such a person might be employed the while in thoroughly testing the water according to the recognized rules of art, which are simple and easy of execution.

"From the points of view of your Committee, the tests quoted from

* Practical Suggestions in Naval Hygiene, Washington, 1873, pp. 84, 86.

Gihon are of little or no account, excepting the test with potassium permanganate. The soap test and the tests with barium chloride, and ammonium oxalate, apply only to the 'hardness' of water, which has nothing to do with the question of sewage pollution. The 'precipitate insoluble in nitric acid,' obtained by means of nitrate of silver, shows merely the presence of common salt, which, in a seaside place, may, of course, be normal. Some analysts have urged that since salt is abundant in urine and in sewage, the presence of any large proportion of it in the water of a well may excite suspicion; but manifestly the man who can say this in any special case must have much experience and excellent judgment. I doubt myself whether the test would have any real utility in a seaport town.

"The decolorization of a standard solution of potassium permanganate is, doubtless, a test of value, though it is not infallible in respect to all kinds of pollution. It is the only one of the tests mentioned by you to which I would attach the least importance, excepting, of course, the indications of taste and smell. Not only does the permanganate test fail to indicate pollution in some cases, but errors may arise from its use in the case of harmless peaty waters, or even of waters from brooks which contain innocent organic matters. Have you ever happened to see water from the great Dismal Swamp? It will keep for years, of excellent quality, according to accounts, and all the while preserve a deep wine color. The permanganate test, I say might easily mislead in the case of any such water as this. The really useful tests of the present day are with 'Nessler's reagent'—for ammonia and albuminoid matters—as set forth in minute detail by Wanklyn, in his book on Water Analysis.

"I note the fact that Gihon's tests, as quoted by you, apply to a totally different problem from yours. His aim is to select good soft water for ships' use. His argument is, 'Get the best,' while yours is, 'Can we safely use what we have?'"

Professor Field sent the following rules for water analysis, that he had condensed from Wanklyn and Chapman:

"1. Clearness.—Hold the water against a black surface.

"2. Color.—Hold the water against a white surface, and compare with distilled water.

"3. Smell.—Shake the water well.

"4. If previous tests negative, warm the water.

"5. If still negative, add to the warmed water caustic potass. If a marked odor arise, there exists organic matter.

"6. Reactions.—A precipitate from the last test denotes hardness; if colored, organic matter or iron.

"7. To a fresh specimen add iodide potassium, acetic acid, and starch paste, previously mixed, because iodide potassium often contains iodate; exact or finely defined proportions not required. If blue color, nitrites. If color at all deep, the water must be condemned.

"8. Boil fresh specimen with a few drops of sulphuric acid. Remove from heat, and add sulph. hydrogen water. If brown or black color, probably lead or copper present, and water to be condemned.

"9. If last test negative, add ammonia or potass. If blackish precipitate, there is iron.

"10. Boil fresh specimen for few minutes with red litmus.

"11. Do the same with blue litmus.

"These last tests are only important when the water comes from near manufactories.

"In most instances test number seven is not required.

"A pint of water is sufficient for all the tests."

Professor Rogers wrote: "I have made inquiries of Professor Nichols and others, on simple methods of water testing, and could gain no information of a more available kind than what you seem already to have."

Dr. Folsom said: "There are very few facts in science that can be got at a glance, and a determination of the amount of contamination in drinking water is not an exception to nature's laws."

Dr. Fisher said: "I design to prepare and present for the next (State Board) tract (Public Health Tract, No. 3), a collection of easy tests by which most intelligent persons can determine the purity of the water they use. Very few tests would be needed to decide the question you propose, *i. e.*, suspicion. Of course, if color, smell or turbidity be present, as ascertained by shaking, holding to light, or against dark objects, or heating, or addition of kali purum, or if tasting badly, the question of suspicion would be settled at once. But if these are all negative, then the old permanganate of potass test for organic impurities might be resorted to. These few tests would be enough to suspect the water to be unfit for use, and further tests or analyses should then be made for detecting chlorides, nitrites, ammonia, etc."

As a result of the inquiry, it was decided by the Association to appoint a permanent analyst, and Professor Wm. B. Hills, of the Medical School of Harvard University, was chosen. The following are the directions as to collecting and transmitting specimens of doubtful water, submitted by Dr. Hills:

"1. In regard to the quantity. Accidents occur at times, such as breaking a retort, etc. It is also often necessary to make some part of an analysis a second time, so that half a gallon of water should be sent, to guard against all contingencies.

"2. The jug in which the water is sent should be thoroughly clean.

"3. Waters should not be taken, or had better not be taken, during or just after a storm of considerable severity or duration. From the washing in of surface matter by the rain, wells are apt to become temporarily worse, and a chemist might condemn a water taken at such a time, as unfit for drinking purposes, when a day or two might restore it to its previous good condition. A knowledge of the time when a water is taken, might often have, in this way, considerable influence in giving an opinion. The surroundings of the well ought also to be mentioned; the possibility of surface drainage entering it; the proximity of the well to cesspools and other possible sources of contamination; whether the natural drainage under such circumstances tends toward the well or away from it; whether the well has been suspected or not."

At the two following meetings, Dec. 12th, 1878, and 6th Jan., 1879, it was determined to ascertain the true character of Easton's Pond for drinking purposes, and to urge upon the city, in any event,

its immediate adoption for hydrants, and for flushing the sewers and sprinkling the streets; and if found pure, its introduction into the public school houses and other city buildings—as well as to advise its use by private citizens in all cases where wells were found polluted.

On June 25th, a special meeting was held to consider the expediency of advising a modification of the city ordinance relating to the emptying of privy vaults and cesspools.

"Col. Samuel R. Honey was present by invitation, and made a few remarks in relation to the object of this meeting. He stated that the Aldermen and Common Council were meeting together, from time to time, as a General Committee, to take up and revise each one of the city ordinances. On Monday night, the 27th inst., they were to consider the one relating to the emptying of privy-vaults and cesspools.*

"Col. Honey had been present at one of the meetings, by request, and had given the views of those who favored the use of the Odorless Excavator for this purpose. He had listened to the several arguments of the members, and thus was able to give to this meeting a thorough comprehension of the matter.

"Some of the members of the Common Council favored the old method of allowing farmers to take away the night soil as heretofore, requiring no license or guarantee that it should be done in a thorough and cleanly manner.

"The Association felt that it was necessary that suggestions upon this subject should be made to the General Committee, in the hope that they might have some influence with them in the revision of this very important ordinance.

"It was voted that Dr. Storer and the Secretary, Lt. Com. Stedman, be a committee to express in writing to the General Committee of the City Government the opinion of the Association in regard to this subject, and to draw up, in rough form, an ordinance setting forth the more important suggestions which were made at this meeting."

The following is the communication presented by the Secretary to the City Council in accordance with his instructions,

"*Newport, 25th Jan.*, 1879.

"To the City Council of Newport:

"Gentlemen:—At a meeting of the Council of the Sanitary Protection Association of Newport, held this day, its attention was called to a newspaper report of the progress being made by a committee of the City Government engaged in revising its ordinances, especial reference being made to those that affect the public health.

"Whereupon the thanks of the Association were unanimously voted to the General Committee of the City Council for the attention that they have already given to this important matter.

"I have been directed to officially convey to you the above vote, and at the same time, to offer to the consideration of your honorable body a few suggestions concerning a single ordinance, that relating to the *removal* of *night soil*, in the hope that they may be thought worthy of adoption.

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*The above, and much of what will hereafter be presented, is taken directly from the Records of the Association.

"The members of the City Council undoubtedly all understand that the aim of the Sanitary Protection Association is solely to care for individual safety, that it may and can have by its constitution no political interests whatever, and that in suggestions like the present, it is solely endeavoring to assist the city in its protection of every citizen, leaving it wholly with the government to judge as to the usefulness of its advice.

"You will permit me to state the points that have been intrusted to me in the form of queries:

"1. The removal of night-soil from within to without the compact city limits being an absolute necessity, which by the city ordinance already existing, must in the instance of every privy vault be attended to at least once every year, ought there not to be additional precautions that this ordinance is rigorously enforced?

"2. Should not in every case the person undertaking to empty vaults, be compelled to do so thoroughly? This is not always the case; parties interested, especially farmers, being governed by their own ideas as to whether the material to be removed is or is not likely to suit their notions of profit, and as to the amount of labor that is to be performed for the price that is paid.

"3. Can the city have any certainty that this disgusting but very necessary work is regularly, thoroughly and in a cleanly manner performed, save it exacts a pecuniary guaranty from those who undertake it?

"4. Is not the system of license, not only the simplest way, but the surest means of obtaining responsible parties, who would, beside, be at the expense of properly constructed wagons and other apparatus?

"5. Might not this license, tending as it would to give a certain but not unreasonable measure of monopoly of an article, which, in the neighborhood of farms, has its market value, be placed at a price which would bring some little income to the city?

"6. Would it not be well, in view of the results already attained in other cities, and of the ease of carrying out such a provision, and of the increased protection thereby to the public health, to insist that the removal in every case should be by apparatus air-tight as well as water-tight, such as what is technically termed the 'Odorless Excavator' process—which can apparently be employed at all times of the year, and by day as well as by night, without public offense or danger? The only objection to such appliance likely to be made would be by farmers, desirous of saving the slight cost of hauling the fertilizer; but on the other hand, these parties are not citizens of Newport, and it is for the protection of the latter that the ordinance is framed.

"7. If certain specified times of the year are named, is it not better that in this climate removal should be postponed till December first, and not take place after the first of May, and between the hours of ten P. M. and four A. M.?

"The Association has desired me to incorporate several of these points in the rough draft of an ordinance, which the City Council will consider merely of a suggestive character, and nothing more.

"It is hereto appended:

"AN ORDINANCE RELATIVE TO THE REMOVAL OF NIGHT-SOIL AND CESSPOOL STUFF.

"SEC. I.—No person shall engage in the business of carting night-soil and cesspool stuff without a special license therefor, which shall be granted by the Board of Aldermen in accordance with the provisions of this ordinance.

"SEC. II.—Applications for permission to engage in the business of carting night-soil and cesspool stuff, shall be in writing, and shall be accompanied by a bond in the penal sum of fifty dollars, running to the City Treasurer, conditioned that the applicant will obey all the provisions of this ordinance, will at all times keep his carts subject to the inspection of the Inspector of Nuisances, or such other officer as the City Council may appoint to perform that service, and that the applicant will at all times keep the said carts water-tight and well painted.

"SEC. III.—No license shall be granted to any person to cart night-soil or cesspool stuff, until after notice of his application therefor shall have been posted in some convenient place in the City Clerk's office, for at least one week, to the end that any person, who may see fit to do so, may appear and object to the granting of a license.

"SEC. IV.—No person shall cart or remove night-soil or cesspool drainage between the first day of May and the first day of December without a special written order from the Inspector of Nuisances, which shall set forth the necessity therefor; nor at any time of the year, except between the hours of ten P. M. and four A. M.; provided, however, that persons using the system known as the 'Odorless Excavator,' may remove such night-soil and cesspool drainage by that process at any time of the day or night, at any time of the year, provided that a license shall have been granted to them by the Board of Aldermen; and all licenses granted under this ordinance may be suspended for one week, upon the order of the Inspector of Nuisances, approved by his Honor the Mayor, and may be revoked by the Board of Aldermen.

"SEC. V.—All violations of this ordinance shall be punished by a fine of twenty dollars."

At the meeting of Feb. 10th, it was announced that the above communication "had been delivered to the Mayor, Mr. Henry Bedlow, and he had promised to present it to the City Council with some argument in its favor. It has since been ascertained that he was not present when this communication was read, and it was passed by without action or comment of any kind; and the city ordinance to which this related, and which, it was hoped, it might influence for the better, was passed in its present unsatisfactory form.

"Mr. Coggeshall expressed his hearty approval of the communication of the Association, and stated that, in his opinion, its efforts had been thwarted through the apathy of the Mayor. He was mortified to feel that the City Council could treat the communication of the Association with such indifference, and adopt an ordinance so discreditable to themselves and so disgraceful to the city."

(*To be continued.*)

THE CONTAGIOUS DISEASES ACTS OF GREAT BRITAIN.

ABSTRACT OF THE EVIDENCE BEFORE THE SELECT COMMITTEE OF THE HOUSE OF COMMONS ON THE CONTAGIOUS DISEASES (WOMEN) ACTS.

Prepared by J. Birbeck Nevins, M.D., London; one of the witnesses before the Select Committee; President of the National Medical Association for the Repeal of the Contagious Diseases Acts.*

DR. NEVINS' EVIDENCE AGAINST THE ACTS.

The witness for some years declined to take any part in the controversy, for "the subject was a disagreeable one—he thought the statements made in opposition to the Acts were exaggerated—and he disapproved of the manner in which the discussion was conducted. But being a teacher in a medical school it appeared to become a duty to make himself acquainted with the operation of the Acts, and accordingly he did so. Having therefore first carefully examined the Minutes of Evidence before the Royal Commission, and become convinced that the Acts were not defensible either as moral or constitutional legislation, he then examined the whole of the Army Reports to see whether, in a health point of view, they were beneficial," and he found that, as sanitary measures, there was no proof that they had reduced venereal diseases in the army or among the registered prostitutes.

The Home Secretary, Mr. Cross, M.P., had been requested by an association opposed to the Acts to receive a deputation, but had desired that, instead of receiving deputations, a written statement containing the grounds of objection. Witness was asked to prepare the necessary statement, which was presented to Mr. Cross in 1874, and afterwards published; but as the Army Reports did not contain the necessary information for four years, the War Office supplied witness with the missing information for those years, which was incorporated in the third edition of the "Statement," now out of print. This "Statement" was published at the expense of the National Medical Association for the Repeal of the Acts, of which witness is President.

Secondary syphilis—acknowledged on all hands to be the most serious form—from its serious influence upon the patient himself, its liability to repeated relapses, and its being transmitted to his posterity; any failure by the Acts to lessen secondary syphilis is therefore important just in proportion to the importance of the disease itself; one of the principal objects in view in passing the Acts being the reduction of secondary syphilis, and the preservation of children from inherited disease.

The Acts have not produced any reduction in true or constitutional syphilis. The ratio of secondary syphilis in the Home Army as a whole has risen from 24.77 per 1,000 (the estimate laid before the Committee by Sir William Muir) to 26.64 per 1,000 in 1878. The average of the whole period since 1866 being higher by above one per thousand than the highest estimate of what it was in that year.

The *duration* of the disease has also *risen;* the average duration of

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* Concluded from page 405.

the twelve years since 1866 being higher by above a day (1.02) than it was in 1866, when the Act was passed. This period of twelve years embraces three years of partial and nine years of the most complete application of the Acts.

Sir Wm. Muir's new Tables show that the fluctuations in the amount of secondary disease are so great year by year—both in the individual stations, whether under the Acts or not, and also in the two sets of stations, subjected and unsubjected—that the only conclusion which can be drawn is that there is *no apparent connection between the amount of secondary disease and the presence or absence of the Acts.*

The proportion of "simple," "non-infecting," "pseudo-syphilitic" sores is about 4 to 1 compared with "true primary syphilitic infecting" sores, according to the report of the Venereal Committee appointed by the Admiralty and War Office in 1864 (Report, p. vii), and about 3 to 1 according to the evidence of Sir Wm. Muir and the other witnesses examined before the present Select Committee (310). Therefore a fall in "primary venereal sores" does not necessarily indicate a fall in "true primary syphilis;" as it may have occurred simply in the "pseudo-syphilitic" sores.

Witness confirmed the evidence given by previous witnesses that the fall in primary venereal sores had been greater in the 14 stations combined under the Acts than in the 14 *selected* stations not under them; but he contended that this difference did not prove that the Acts had produced the difference, or had been the means of reducing the sores, on the following ground:

He objected to the comparison of the two sets of stations as an erroneous and misleading one; because there was no common ground between them upon which a comparison could be based.

"Primary venereal sores" embrace a large number of "simple," "non-infecting" local sores, which are not liable to be followed by constitutional disease, and a comparatively small number of true syphilitic sores, which are certain to be followed by secondary syphilis. The proportion is variously estimated by different authorities—the Venereal Committee stating it as 4 "non-infecting" to 1 "infecting" sore; Sir William Muir and the witnesses examined by the Select Committee at 3 to 1. It is acknowledged that the mixed class of sores has fallen largely since 1866, but as there has been no fall in secondary syphilis since that date, the witness concluded that the fall had only been among the simple "non-infecting" sores. The fall in the mixed class of sores had however been popularly considered to be a fall in true primary syphilis. The classification is therefore misleading, as well as unscientific, in that it includes under one name a serious constitutional affection as well as a mere local non-constitutional disease.

The greater reduction in the amount of primary venereal sores in the subjected stations compared with the unsubjected ones, is continually put forward in the Army Reports and elsewhere, as a conclusive proof of the sanitary efficiency of the C. D. Acts. Witness contended that it furnished no proof whatever on the following grounds:

1*st. The two sets of stations are so essentially different in every respect as not to admit of comparison.*—In order that a comparison may be of

any value as to the effect of a sanitary measure applied to one place and not to another, the two places must correspond in all other essential respects except the presence of this sanitary measure. But when this necessary rule is applied to the 28 selected stations, the only two that admit of comparison are Hounslow and Windsor, which are substantially alike in important respects ; and the average ratio of venereal disease is less in Hounslow not under the Acts, than in Windsor under them.

The "camps" are so peculiar in their conditions that they are always placed by themselves in the Army Reports for sanitary purposes—and their special features are assigned in the Army Reports as a reason for placing them separately ; but all the camps are under the Acts—there is not one camp not under them for comparison. Every one of the large seaports is also under the Acts. There is not one station "not under" them, to be compared with Plymouth, Portsmouth and Chatham. And the selected cathedral cities are also all under the Acts.

On the other hand, there is no place under the Acts that admits of comparison with London, Dublin and Edinburgh, not under them ; and as every large manufacturing town is without the Acts, no comparison can therefore be made among them.

2*d. More than half the army not under the Acts is left entirely out of the reckoning.*—The introduction of these disregarded men at once reduces the average ratio of primary venereal sores by about 25 per 1,000, but until the last six years the Army Reports have taken no notice of them, and there was no means of knowing this important fact.

3*d. In the middle of the comparison London was introduced among the unsubjected stations* (161), *and at once raised the ratio about* 20 *per* 1,000.—The effect of this was at once to raise the ratio of disease by an average of about 20 per 1,000 (164) to the discredit of the non-subjected stations. If London, which admits of no comparison with any other place, is withdrawn, and the whole of the unsubjected men and places are taken into account, the average ratio of primary venereal sores in the stations not under the Acts, is at once reduced about 45 per 1,000.

4*th. In the subjected stations extraordinary precautions, quite independent of the Acts, have been taken to prevent the spread of disease, while they have been entirely neglected in the unsubjected stations.*—The precautions consist in the examination of every soldier coming into a subjected station, to ascertain if he has venereal disease, in which case he is sent to hospital in order to prevent his infecting the women, and thus spreading disease ; while no such examination of the soldiers is made on their coming into an unsubjected station, but they are allowed to spread disease without any check.

5*th. Diseased women frequently leave the subjected stations when they become diseased, in order to escape the compulsory confinement in hospital, and go to unsubjected stations, where they spread disease.*—This was proved by the evidence of Dr. Barr, given before the Select Committee in 1879, by the evidence given before the Lords' Committee in 1868, in the case of women leaving Portsmouth and going to Winchester, and by the action of the Town Council of Newport in the

case of women leaving Portsmouth, and of the Town Council of Exeter in the case of women leaving Plymouth. The number of women who leave the subjected stations is about 900 yearly.

6th. The subjected and the 14 *selected unsubjected stations exhibited marked differences in the amount and progress of disease for some years before the Acts were in existence, which showed that they differed in an important and characteristic manner, quite independently of the Acts.*—In the subjected stations there was a large, unbroken and remarkably steady fall in primary venereal sores for six years before the Act was passed, and this fall has continued, with little striking change, since the Act was put in force. In the 14 unsubjected stations, on the contrary, the fall was less in amount, and was fluctuating in its course from the first, and this fluctuating character—sometimes rising rapidly, and again falling as rapidly—has been a strongly-marked feature throughout the whole period of 18 years, from 1860 to 1878, indicating some essential difference in the character of the two sets of stations, which renders comparison as to the influence of the Acts of no value.

7th. The ratio of venereal diseases—both of primary venereal sores of secondary syphilis and of gonorrhœa—in the 28 *selected stations, is perfectly irrespective of the presence or absence of the Acts.*—This important fact is illustrated by the following tables:

TABLE—Showing the Average Ratio per 1,000 from 1867 to 1877—partial application of the Acts, and concealment of disease after 1873.

Average Ratio per 1,000.	Stations under the Acts.	Stations not under the Acts.
30.4		Athlone
30.9		Pembroke dock
34.1	Shorncliffe	
45.7	Chatham	
46.1	Cork	
46.4	Plymouth	
46.9		Fermoy
47.3	Winchester	
49.8	Dover	
50.3	Portsmouth	
51.0	Curragh	
52.5	Canterbury	
52.5	Woolwich	
54.9		Edinburgh
55.1		Warley
60.3	Aldershot	
62.1		Belfast
63.4	Colchester	
66.7		Hounslow
72.1		I. of Wight
76.6	Windsor	
77.8		Limerick
90.6	Maidstone	
99.3		Preston
99.8		Sheffield
112.3		Manchester
123.5		Dublin
170.2		London

TABLE—Showing the Average Ratio per 1,000 of Gonorrhœa from 1867 to 1877—partial application of the Acts.

Average Ratio per 1,000.	Stations under the Acts.	Stations not under the Acts.
57		Fermoy
60	Windsor	
65		Athlone
66	Curragh	
67	Cork	
68		Pembroke dock
70		Hounslow
70	Shorncliffe	
75		Limerick
84		Edinburgh
87	Dover	
89	Aldershot	
89		London
95	Woolwich	
97	Chatham	
97	Winchester	
111		I. of Wight
115	Portsmouth	
116		Dublin
117		Warley
119	Plymouth	
121	Colchester	
122		Belfast
131	Maidstone	
133	Canterbuy	
137		Manchester
144		Preston
151		Sheffield

Table showing the rates per 1,000 constantly sick from secondary syphilis in the twenty-eight selected stations for the whole nineteen years combined—1860 to 1878:

Order.	Name of Station.	Rate per 1,000 for the 19 years.	Under or not under Acts.	Average annual ratio per 1,000.
1	Cork	29.48	under	1.55
2	Fermoy	29.49	not under	1.55
3	Pembroke Dock	31.08	not under	1.64
4	Belfast	31.42	not under	1.65
5	Dover	32.53	under	1.71
6	Edinburgh	32.70	not under	1.72
7	Limerick	33.39	not under	1.76
8	Warley	36.36	not under	1.91
9	Shorncliffe	36.86	under	1.94
10	Winchester	37.09	under	1.95
11	Athlone	37.37	not under	1.97
12	Chatham	37.93	under	2.00
13	Curragh	38.61	under	2.03
14	Colchester	40.00	under	2.11
15	Maidstone	41.29	under	2 17
16	Aldershot	41.41	under	2.18
17	Plymouth	44.92	under	2.36
18	Hounslow	45.65	not under	2.40
19	Sheffield	46.93	not under	2.47
20	Portsmouth	47.26	under	2.49
	Woolwich	47.26	under	2.49
21	Canterbury	49.94	under	2.63
22	Isle of Wight	49.97	not under	2.63
23	Manchester	51.93	not under	2.73
24	Dublin	57.23	not under	3.01
25	London	62.49	not under	3.29
26	Windsor	63.21	under	3.38
27	Preston	75.01	not under	3.95

From these tables it appears that the stations with the smallest amount of venereal diseases are not under the Acts, as also are those with the largest amount, viz.:—the large manufacturing towns, Dublin and London. Edinburgh, not under the Acts, is lower than Aldershot, under them; and Hounslow and several other stations not under them are lower than Windsor, which has been specially brought before the Committee as proving the sanitary benefits resulting from the Acts.

8*th.*—*The statistics of individual stations under the Acts exhibit such discrepancies after the Acts have been applied, as show that they produce no uniform sanitary influence, either for good or bad.* In the case of the largest stations—Plymouth, Portsmouth, Chatham, Woolwich, Aldershot, and Shorncliffe—the Army Reports enable a comparison to be made of nearly equal periods before and after the application of the Acts, viz., six or seven years before and after, and the following table shows that in some the improvement was more rapid before, and in others after the Acts were applied:

Woolwich,	6 years	before	Act,	average	fall,	15.83 per cent.
"	7 "	after	"	"	"	7.12 "
Aldershot,	7 "	before	"	"	"	6.29 "
"	6 "	after	"	"	"	2.21 "
Plymouth,	6 "	before	"	"	"	9.67 "
"	7 "	after	"	"	"	10.71 "

Portsmouth,	6	years	before	Act,	average	fall,	11.09	per cent.
"	7	"	after	"	"	"	12 07	"
Chatham and Sheerness,	6	"	before	"	"	"	4.23	"
"	7	"	after	"	"	"	11.14	"
Shorncliffe,	8	"	before	"	"	"	9.09	"
"	5	"	after	"	"	"	22.09	"

Cork and Windsor were uniformly more diseased after the Act than before it was put in operation, until 1873, when concealment of disease affected the statistics.

Colchester, Winchester, Dover, Canterbury and Maidstone, small stations, and the Curragh, a large camp, show a remarkable improvement after the Act was applied.

Of the above stations, Sheerness is so peculiar in its geographical situation as to admit of no general inferences being drawn from it. Shorncliffe is largely used as a sanitarium for invalid soldiers to recruit in; and the other stations which have improved so largely—the Curragh, Colchester, Winchester, Dover, and Canterbury—had no lock hospital accommodation before the Act provided it. In the smaller of these stations the fluctuations have been so great as to render general inferences difficult.

9th.—The discrepancy in the ratios of primary venereal sores among different regiments, at the same time and in the same stations, and all under the Acts, is much greater than the difference between the subjected and unsubjected stations. The evidence of Mr. Lawson before the Select Committee, showed that in Aldershot the ratio of primary venereal sores was only 23 per 1,000 in one regiment, while it was 142 per 1,000 in another regiment in Aldershot at the same time. The greatest difference between the lowest subjected and the highest unsubjected station has scarcely ever been so much as this.

In the Foot Guards the ratio of disease is uniformly nearly three times as high as that in the Household Cavalry, though both are quartered in London at the same time. Similar differences between different regiments are very common, and are frequently alluded to in the Army Reports.

Lastly.—The unsubjected stations do not admit of comparison with the subjected ones, because, with the exception of Dublin and London, none of them possess Lock Hospitals in which diseased prostitutes can obtain treatment, while there is the most ample hospital provision for them in connection with every subjected station. The importance of hospital treatment for prostitutes can scarcely be overrated as a question of health, and it is deeply to be regretted that such provision exists in so few places. Upon this point the witness expressed himself strongly on many occasions, and adduced the case of Winchester as a striking illustration. When the county hospital was first established there, a lock ward was provided with sufficient beds, and after a time venereal disease had lessened so far as to render some of the beds unnecessary. At a later date a change occurred in the administration of the hospital, and venereal patients were refused admission. Disease then increased in Winchester to an alarming extent, and so continued until the provision of lock hospital accommodation under the Act again produced improvement, which still continues. The witness was quite aware

of the difficulties which surround the question of admitting the prostitute class to general hospitals, but did not think it the less necessary on that account.

Gonorrhœa.—The examination relating to the influence of the Acts upon gonorrhœa was brief, as their failure to produce any beneficial influence upon this disease in the subjected when compared with the unsubjected stations was acknowledged by Sir William Muir, and has been the subject of yearly comment in the Army Reports for many years until 1873, when concealment of disease, in consequence of Lord Cardwell's orders, invalidated the army statistics. "The difference in the average ratio of gonorrhœa between the two sets of stations has been but very slight—only one or two in the thousand—but that difference has been in favor of the unsubjected stations up to the date of 1873." "Gonorrhœa exhibits remarkable fluctuations both in the subjected and the unsubjected stations. After many years of the Acts in Plymouth, the ratio of gonorrhœa was higher by many in the thousand than it was in the six years before the Acts were put in force—there is no such fluctuation in primary veneral sores in the large stations."

The ratio of gonorrhœa is perfectly independent of the presence or absence of the Acts. This fact is illustrated by the foregoing table, and confirms the opinion of the witness that the Acts cannot be shown to have produced any beneficial sanitary influence upon the health of the army. The table gives the average ratio of gonorrhœa in all the 28 selected stations from 1867 to 1877 inclusive. The stations follow one another in the most indiscriminate order, the best and the worst being stations not under the Acts, and the others following one another almost alternately.

Is there any explanation of the reduction of one class of venereal diseases (primary venereal sores) and the absence of reduction in another class (gonorrhœa)? Q. 211. It is a very remarkable fact, is it not, that a system has been set on foot by legislation for the diminution of venereal diseases, which are divided into certain classes, and that you have a reduction in one class while you have no reduction whatever in the other. I have not succeeded with any former witness in extracting from him any expression of opinion as to the cause of that remarkable divergence; have you any view upon that subject? Ans. "I know scarcely any more perplexing question which can be asked; but I think there is one explanation—that dirt sores (using that expression for pseudo-syphilis) can be materially prevented and healed by simple cleanliness. In due course, year after year means for ablution and appliances of that kind have been extended throughout the army, and dirt sores therefore are in a fair way of being removed by those sanitary arrangements; but gonorrhœa cannot be removed by simply washing; neither the woman nor the man can prevent the occurrence of gonorrhœa by simple cleanliness; and, therefore, the means for ablution, which benefit the primary venereal sore, or the dirt sore, are practically without effect upon gonorrhœa. Gonorrhœa pursues its natural course, which is a very fluctuating one, whereas the primary venereal sores are falling in number with the continued employment of beneficial sanitary arrangements. I

have no explanation to offer further than that. As I say, it is a most difficult question to account for the extreme fluctuation of gonorrhœa, and I have not been able to find any theory which is satisfactory to my own mind to account for it."

What explanation can be given of the want of success in secondary syphilis as well as in gonorrhœa, and the alleged success in primary venereal sores? "The class of 'simple' 'pseudo-syphilis' or 'dirt sores,' is one which is detected with the utmost facility in both men and women, for they are superficial, and are often large and very painful, while the true infecting chancre is small, often painless, and often hidden in women by the natural folds of the mucous membrane. It is therefore easily overlooked in examination, and is often quite unknown to the patient. Cleanliness therefore and common care are capable of reducing the frequency of the 'simple sores,' which are easily detected and constitute so large a proportion of primary venereal sores, while the true infecting sore is easily overlooked. Gonorrhœa is easily concealed by syringing and other devices well known to prostitutes, and is also liable to be confounded with the discharges which are natural to many healthy women, and may therefore be purposely concealed or accidentally overlooked or mistaken.

The witness was of opinion, judging from his own professional experience of above 40 years, and from his reading also, that syphilis is a much less severe disease, and less formidable in its consequences at the present time, than it was formerly. He quoted in support of this belief Mr. Syme, of Edinburgh, Mr. Simon, medical officer of the Privy Council, Mr. Bryne's evidence, of the Dublin Lock Hospital, given before the Venereal Committee, and Surgeon-Major Wyatt's evidence, of the Coldstream Guards, given before the Lords' Committee, and said that he believed it to be generally acknowledged in the profession that such was the case.

Cross-Examination.—In cross-examination Col. Alexander quoted the evidence of Mr. Bond, given before the Select Committee in 1879, to the effect that syphilis in London is as severe now as it was twenty years since, and he read long extracts from the evidence of Sir Wm. Jenner and others, given before the Venereal Committee and elsewhere, to show their opinion of the severity and extent of syphilis at the present time, and inquired whether that did not modify the opinion which the witness had given? Dr. Nevins replied that no one could doubt that syphilis was a severe and formidable disease, or deny that the authorities quoted by Col. Alexander thought more seriously of its general severity and prevalence than he himself did, or the authors he had quoted. But all the witnesses adduced by the honorable member were London men, who saw the worst cases from every part of the country, which came to London for superior advice. This unconsciously and unavoidably gave these specially eminent men an exaggerated impression of the general prevalence and severity of the disease throughout the community. This very difference of opinion among such eminent authorities was, however, he contended, a reason against such exceptional legislation as the C. D. Acts, instead of being a reason in favor of it.

The reduction of primary venereal sores in the army previous to the Acts, is, however, independent of the general question of the se-

verity of syphilis in the present day compared with what it was forty or fifty years since, and upon this point Dr. Nevins' evidence, taken from the tables put in by Sir William Muir, was that primary venereal sores had actually fallen in the stations ultimately put under the Acts from 146 per 1,000 in 1860 to 102 per 1,000 in 1864, without any legislation whatever, which was at the rate of 8.6 per cent. yearly. Primary sores had also fallen in the 14 stations which were never brought under the Acts, from 134 per 1,000 in 1860 to 79 per 1,000 in 1866. This fall of above one-third of the entire amount of primary sores in the whole army was continuous and independent of legislation, and it was probable that the fall would continue, because the various agents of a sanitary and moral nature, which had apparently caused it, were increasingly applied throughout the army year by year, and would therefore probably maintain their influence. Without positively asserting that the fall would have continued at the same rate if the Acts had not been passed, Dr. Nevins showed by a diagram, which was handed in, what the amount of disease would have been for every year if the fall had continued at the same proportionate rate; and he showed that in point of fact the actual amount did correspond with this calculated fall in 1866, 1869, 1873, and 1875. Where the actual amount differed from the calculated amount it was almost always in excess of the calculated amount; the introduction of the Acts not having expedited the fall, but having been followed by a retarded fall upon the average of the whole period since 1866.

Fatality attributed to syphilis:—*Q.* 309. Col. Alexander called the attention of Dr. Nevins to the following extract from the Report of the Registrar-General of Deaths, vol. 23, p. 215:—Under syphilis, 1,859 deaths were returned—the number of such deaths is rapidly increasing—the mortality thus designated has, in 17 years, risen in the ratio of 35 to 85"; and in vol. 25, p. 69:—"The registered deaths from syphilis during 26 years, 1848–1873, were 31,860—the registered deaths increased during the whole period"; and he added, "I think you will admit after that, will you not, that the Returns of the Registrar-General do not quite tally with the opinion you have expressed as to the diminution in the amount of syphilis in the population generally." *Witness* replied that "The increased registered mortality does not by any means prove an increased actual mortality. It has become a fashion, and a well-recognized fashion, in the medical profession, to attribute much disease to syphilis which used not to be attributed to it. . . . The evidence of Sir Wm. Muir was to that effect, which would be confirmed by every medical man, that it had of late become the fashion to attribute nearly everything to syphilis. He mentioned a number of diseases in his evidence before this Committee that are now attributed to syphilis, that formerly were not attributed to it."

Sir Wm. Jenner, before the Lords' Committee in 1868 (*Q.* 1085), says—"It is one of the most fatal diseases we have in this country, and every day's advance in our medical knowledge raises its position in that respect."

Yet there are sixty diseases tabulated by the Registrar-General in the order of their *fatality*, and in 1868, syphilis stood only 42d in the

order of fatality. In 1872, it stood only 45th in the list; and on the average of 25 years (1848 to 1872), it was only 53d in point of fatality.

Sir James Paget (1st Report Association for extending the Acts, p. 25) says—"Every year an *untold number die of syphilis*, at what, but for it, might have been their term of fullest power." This expression probably means between 15 and 50 years of age, but the abstract of the returns of the Registrar-General for 25 years (1848 to 1872) shows that 262 is the number of deaths annually from this disease between 15 and 50 years of age in a population of twenty millions and a half, or one death annually in above 78,000 people. No one could think of charging the above eminent men with conscious exaggeration, but their very eminence brings them into habitual contact with the most serious forms of disease and with more than the average amount, and they would appear unconsciously and almost inevitably to exaggerate the prevalence and severity of the disease throughout the community.

As a further illustration of the absence of real foundation for the exaggerated impression often existing, Dr. Nevins informed the Committee that the deaths from syphilis in the Army during the six years, 1872 to 1877, were only one death in 16,044 men.

Table showing the mortality from syphilis compared with some common diseases (omitting decimals), on the average of 25 years.

Sir Harcourt Johnstone asked the witness to give the approximate mortality of syphilis and some other common diseases:

SYPHILIS.		OTHER DISEASES.	
Syphilis, hereditary	6	Thrush	7
Syphilis at all ages	1	Rheumatism	2
Syphilis "	1	Small-pox	5
Syphilis "	1	Measles	7
Syphilis "	1	Whooping Cough	8
Syphilis "	1	Scarlatina	15
Syphilis "	1	Convulsions	23
Syphilis "	1	Phthisis	40

Witness alluded to the modern medical belief in the widespread influence of syphilis as originating or aggravating other diseases, and said that the evidence which appeared to satisfy medical men of fifteen or twenty years' standing that syphilis was present in various portions of the body after death, was not satisfactory to medical men of an older date, and that in the debates that took place lately in the Pathological Society of London, the younger men attributed diseased conditions that they found after death to syphilis which the older men thought had no connection with it.

Every form of disease now ascribed to Syphilis: On this point the evidence of both Mr. Lawson and Sir William Muir is instructive, and may teach a useful lesson. "Can you give the Committee any idea of the proportion of soldiers annually invalided, whose disease is unquestionably syphilitic in its origin?" A. "It is very difficult to do that, because the syphilitic taint leads to the aggravation of a great number of diseases. It assumes *all forms* of disease. A man may be invalided for fits, which are connected with original syphilis. He may have asthma, connected with original syphilis, or consumption, or rheumatism. So that while a great number of men are affected in

that way, you cannot positively put your finger upon it and say so." (Lawson 805) [Nevertheless, it is the present fashion to say so, though "you cannot positively put your finger upon it."] Sir William Muir says (136, 137), "I believe that there is a great deal of consumption, which is very prevalent in the Guards, due, in a great measure, to syphilis. There are hardly any disorders now in the category which are not more or less traceable to it." [About forty years since, "struma" (according to the theory generally held by the medical profession) was the origin of every unusually acute or unusually obscure disease. This was superseded for a time by the homœopathic "psora," which was supposed to account for every unintelligible case. And of late years, "syphilis" has been raised to the chair of state, and "there is hardly any disease now in the category which is not more or less ('traceable') *ascribed* to it" within the last 10 or 15 years. It is not an exaggeration to say that cases are now brought before Medical Societies in which a man of 70 to 80 years of age having died from some disease or other without any previous history of his life, some microscopic deposit has been found in his arteries or elsewhere, and has been pronounced dogmatically to be syphilitic, although it has never been known that the man had ever had syphilis. In other cases the patient has said that he had never had the disease; "then it has been his father, or he had had it without knowing it." The man may have had a family of healthy children and not a symptom of syphilis during his life: "no matter." "Here are gummata in the aorta, or somewhere else, and I pronounce them to be of a syphilitic character on the authority of my microscope, from which there is no appeal." The physician who doubts the evidence and withholds his assent is regarded as having been a worthy man perhaps in his day, but is calmly pitied as quite behind the advanced knowledge of the present age.]

Alleged connection between syphilis and phthisis, as cause and effect:—Col. Alexander and Sir Harcourt Johnstone questioned witness as to syphilis proving a frequent cause of phthisis, the large amount of this latter disease among the Guards being sometimes attributed to syphilis. *Ans.* "I have not been able to trace any connection between the amount of syphilis and the amount of consumption in the various bodies."

In his evidence before the House of Lords' Committee (*Q.* 654), "Do you think that syphilis has anything to do with consumption?" Sir James Paget says, "That has not been proved, and I think it very unlikely to be so."

"*How can it be that the disease has not diminished, if we have hospitals and surgeons and nurses, and we find people with the disease and cure them? Surely by the number of people that are cured the number of sick people must be diminished.*" "I cannot make out how anybody can say that if there are a number of people, say a hundred, who are ill, and you by government machinery or hospital machinery take over half of those people and put them into hospital and cure them, mankind is not benefited. If you could explain that to me, you would really settle a doubt which quite disturbs my mind." (Mr. Cavendish Bentinck, 604.)

There is scarcely any question that could have been asked of greater

practical importance than the above, when people are earnestly desiring to arrive at a true conclusion as to the nature and results of the C. D. Acts. The question is one that offers serious perplexity to many earnest men, and was expressed in the following passage in the "Statement containing the grounds upon which the C. D. Acts are opposed," which was addressed to the Home Secretary, Mr. Cross, and of which a copy was handed in by witness at the commencement of his evidence:

"Statement," 3d edition, p. 52.—"It stands to reason that if you shut up a number of diseased women in hospital you must *lessen* the amount of disease, even if some escapè you, and men are not detained at all." "Such is the objection frequently made by professional friends and others consulted during the preparation of this statement, when made aware of the results now arrived at [*i. e.*, the sanitary failure of the Acts]—sometimes made by advocates of the Acts, determined that nothing shall shake their confidence in such legislation, but more frequently by men simply desirous of ascertaining the truth, and perplexed at finding a result so different from what appears to be a natural expectation."

The answer by the witness was the following: "It is a most serious and important question.

"The advantage of hospitals I have dwelt upon throughout my evidence most strongly. I do not think it possible to over-estimate the value of lock hospitals; but the Acts do not consist in principle in the establishment of lock hospitals. It is acknowledged all the way through, and great stress was laid upon it in the Report of the Royal Commission, that the essential and distinguishing feature of the Acts is the periodical examinations of women, but the lock hospitals could be provided perfectly irrespective of the periodical examination of women. Then it does seem probable that if you shut up a number of diseased women you should limit the disease; but supposing that the women who remain out have twice as much intercourse with men, they will from that excessive intercourse contract disease and communicate disease of a more virulent character; and the evidence of Dr. Barr was conclusive, as it appeared to me, that the intercourse with the women who remain on the streets is something almost incredible. He used the word 'incredible.' He mentions a number which is scarcely to be credited (above 20 in a day), and that those women receive diseased secretions from one man and communicate them to another, not becoming diseased themselves, was also a most distinct part of his evidence. Therefore it seems to me that, having a number of women shut up does not necessarily limit the amount of disease, because it leaves the others, if they are diseased, to communicate the disease to twice the number of men. Then, the fact that that number of women are shut up does unquestionably produce a false impression of safety. There are some men—I do not mean to say how many, for I have no means of knowing—but there are some men who will commit prostitution when they think they are safe who will not do so when they think there is a danger; and therefore, again, the examination of those women, and shutting up in hospital under this Act a certain number who are diseased, appears to me to promote the risk of disease amongst a set of men who would not be exposed to the disease if there was apparent danger.

"Then, the women who are examined, and are passed as being free from disease, are, for a whole fortnight, having intercourse of this unlimited character, and receiving and spreading disease during the whole of that period, and, therefore, we cannot say that in shutting up 50 or 100 women we are limiting the amount of disease which the remainder are capable of spreading. I think the explanation of the falling off in the amount of improvement is that certain women are shut up, but those that remain are sources of increased danger; and that there is a false impression of safety which promotes indulgence, and increased disease is the result."

"My principal object was to obtain from you a clear statement of the grounds upon which you object to the Acts, which I had not distinctly before—at least not in so distinct a form as you have been good enough to give it to me at present—but I must ask you, with reference to this, whether you found the opinion which you have given me just now upon the evidence which has been given before this Committee, or upon information which you have received elsewhere?" "I believe I may say that my answer was entirely dependent upon the information given before this Committee."

"Is it your contention that the Acts have left the prostitutes in the subjected districts in a worse and more dangerous condition than they found them?" "That the Acts have left them in a more dangerous condition than they found them is my contention; for I find from Captain Harris' Reports that the ratio of disease among the registered prostitutes is higher by something like 24 per cent. than it was in 1866—the first year that he reports when the Act was in force; and I find from his reports also, that the ratio of disease has been gradually rising amongst the prostitutes in Aldershot for eight years."

"According to your view, the Acts have rendered the prostitutes more dangerous than they were before?" "I think they have."

"Now, with regard to the soldiers themselves in our subjected or protected districts, do you mean to say that the fact of those prostitutes being under control does not lessen the opportunities for the contraction of disease by the soldiers?" "I think not; and I think the proof of that is, that whilst there was an improvement by 6 per cent. yearly before the Act was introduced, there has only been an improvement of 2 per cent. yearly at Aldershot since the Act has been in force.

"I put it to you as a man of the world: If there is a barrack full of soldiers, and there are prostitutes hanging about the doors, are they not much more likely to get disease from those prostitutes than if they were under supervision?" "Before the experiment had been tried, I should have said that they probably would have been more likely to contract the disease; but we find, as the result of the experiment, that the women who remain consort with many more men, and the women who remain are actually, according to Captain Harris' Reports, more diseased than they were, and, therefore, the result of the experiment seems to me to show that shutting up these women does not limit the amount of disease, either in the women or in the men."

PUBLIC HYGIENE IN SPAIN.

By T. P. Corbally, A.M., M.D.

Suum cuique is the very laconic but significant text from which Sr D. Francisco Mendez Alvaro, one of the Directors of the *Siglo Medico*, in a series of articles published in that journal in August, 1880, elaborates a most interesting history of Public Medicine in Spain from the earliest date to the present time. The writer complains, and with great justice, that the authors of works of more or less importance, on the history of Public Medicine, have completely ignored Spain in their enumeration of the countries that have organized State Medicine. He says: "We have seen with regret and even with shame —why not admit it?—that neither Belval,* who presented a Report on this subject to the International Medical Congress held at Bruxelles in 1875; nor Dr. Uffelmann,† in his Prize Essay, presented to the *Deutscher Verein für öffentliche Gesundheitspflege*, in which he gives a history of Public Medicine in the different states of Europe and in America; nor M. Martin, in a Memoir recently presented to the Academy of Medicine in Paris,‡ nor others whose writings are less known, have even mentioned Spain."

Besides the works here cited, may be mentioned "The History of Sanitary Legislation in England," by Dr. Finkelnburg, A. O. Professor in the University of Bonn.§

In the last section (*Abschnitt*) of his book, Finkelnburg devotes fifty pages to the "Organization of Public Medicine in the other enlightened States of Europe and North America, viz: the United States, Holland, Belgium, France, Italy, Switzerland, Austria, Middle German States, Hamburg, Prussia, Alsace and Lorraine."

In this omission he places Spain with Turkey, Russia and the extreme northern states of Europe. That Denmark should have been omitted is not surprising. The hatred of Prussia for the claimants of Schleswig-Holstein is well known. It is equally well known to the readers of The Sanitarian, that Denmark has done much to improve the sanitary condition of her cities and the health of her working population.

Spain has no reason to feel ashamed of this contemptuous neglect. She gave to Roman literature some of its noblest treasures, and to the Empire some of its ablest generals and wisest rulers. Since the so-called revival of letters, Spain has been the "treasure house" whence the literary men of other nations have drawn much of the material for

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*T. Belval; Essai sur l'organisation générale de l'hygiène publique.—Bruxelles, 1876.

† Dr. J. Uffelmann: Darstellung des auf dem Gebiete der öffentlichen Gesundheitspflege in ausserdeutschen Ländern bis jetzt Geleisteten.—Berlin, 1878, pp 641.

‡ Essai d'organization de la Médecine publique en France.—Annales d'Hygiène Publique, numero d'Août, 1880.

§ Die Öffentliche Gesundheitspflege Englands, nach ihrer Geschichtlichen Entwickelung und gegenwärtigen organisation, nebst einer vergleichender Übersicht der sanitärischen Institutionen in andern culturstaaten, von Dr. Finkelnburg, A. O. Profesor an der Universität zu Bonn.—Bonn, 1874.

their most celebrated contributions to the literature of their respective countries. It has always been the policy of some nations to belittle or belie their neighbors. Thus Ford says: "The *Encyclopedia Britannica*, through seven editions, kept asserting and reasserting that the Escorial is the work of a French architect, and therefore abounds in the deformities of the French and Italian schools." Herrera, the architect, was no Frenchman. He belonged to a family that has given to Spain some of her greatest poets and painters.

> "Accipe nunc Danaum insidias, et crimine ab uno
> Disce omnes."

The history of *Public Medicine* in Spain may be divided into four periods. The earliest period, extending from the time of the Romans to the year 1721; the second, from 1721 to 1847, a period of 126 years; the third, from 1847 to the present year, 1881. In October, the new law will be submitted to the Council, and will undoubtedly receive the royal signature, and its introduction into the kingdom will thus form the fourth period.

In the *first period* the writer mentions the services of the *archiatros*, during the time of the Romans; subsequently, during the time of the Goths, medicine was taught by private teachers. During the time of the Moorish ascendency, schools and academies were established for giving instruction in medicine. At this time, doctors were obliged to submit to a public examination, in the districts in which they proposed to practice medicine, in order to prevent quacks and charlatans from trifling with the health and the lives of the people.

Various changes took place until John I., King of Castile, not satisfied with the manner in which the examinations were conducted, appointed the physicians of his household to examine all those who applied for the privilege to practice medicine. The establishment of a University in Castile, in the twelfth century, and others in Aragon and Lerida a century later, effected still further improvements.

The creation, by the Catholic Kings, of the tribunal called *Proto Medicato*, charged with the examination of physicians, surgeons, and pharmacists, even when they held diplomas from the Universities, and, what is still more remarkable, the giving to them authority to inquire into whatever concerned Public Health, and the Medical Police formed a new era in the history of medicine.

In the fifteenth century, through the exertions of Fray Jofre Gilaberto, was established the first hospital for the insane, at Valencia.

Public prostitution was subject to strict surveillance, and the abandoned, to frequent inquiries, about the same time.

In 1475, the first *Junta*, or Public Health Association, was established in the island of Majorca.

Ferdinand and Isabella established the first hospital for those afflicted with leprosy and gave the exclusive care of it to physicians, and the first military hospital of which there is any authentic account, was founded by Queen Isabella during the siege of Granada.

The art of teaching deaf-mutes to speak, and also the method of teaching the blind to read, is due to Juan Rodrigues Pereira, who lived several years prior to the abbot L'Epée. Subsequently we find the institution of the *brothers infirmarians*, due to the venerable Ber-

nardino Obregon, and the religious hospital nurses of San Juan de Dios (Saint John of God) and Saint Hipolite.

The *Providenceas*, or Orphan Asylums for the care of orphans and abandoned children, and for the purpose of preventing public begging, were organized about the same time. The establishment of public baths which existed from the Romans was encouraged and the number greatly increased.

The *proto medicato*, and all other organizations for the assistance of the people when afflicted with severe epidemics, and the establishment throughout the provinces and municipalities, of Health Associations (Juntas de Sanidad), and of the means of isolating patients afflicted with contagious diseases, and the establishment of means of protection (providencias) for the preservation of the public health, were encouraged.

The organization of Medical Societies in populous districts, to prevent the introduction of abuses and the violation of the regulations laid down by the medical police, was promoted. In fine, the legislative acts regulating pharmacy were very complete, and worthy of study, even at the present time.

Dr. Mendez Alvaro, in the article from which the few points here given have been extracted, shows that the Spanish authorities had always, down to the year 1721, given at least as much attention to the health of the people, as other civilized nations.

The Second Period began in 1721, during the prevalence of the dreadful plague in Marseilles. The alarm was so great throughout Spain that the Government established a Supreme Sanitary Council (Junta Suprema de Sanidad), which retained its authority, with few interruptions, due to wars and violent political changes, until March, 1847.

This Supreme Council had the direction of the public health throughout the kingdom, and full authority over provincial and municipal Boards of Health (Junta de Sanidad).

Thus the Spanish Government, in the establishment of a Board of Direction for the regulation of public health, was fully a century in advance of France, which established the *Conseil Superieur de Santé*, by a decree bearing date the 7th of August, 1822.

This board possessed full executive powers; decided all questions regarding the interpretation of decrees and regulations; it had full authority to enforce compliance with its rules; it had the appointment of all sanitary officials, established regulations for the management of baths and the proper use of mineral waters; and proposed, for the consideration of the Government, such reforms and general regulations as it deemed necessary for the protection of the public health.

The writer here asks the important question, which, no doubt, has inspired the scientific and reflective portions of the articles in *El Siglo Medico*: "What was really wanting at this time to form a perfect organization of Public Health?"*

"Just what is needed to-day, when so much importance, so much

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*¿Que faltaba realmente en esa epoca para una cabal organizacion de la medicina publica?

attention has been given to public health: the establishment of a *Ministry of Public Health.*" The *Siglo Medico* thinks that, in the displaced Junta Suprema de Sanidad, an excellent model might be found, and one worthy of imitation by all the Governments that maintain sanitary regulations. The defects in the organization of that body are frankly admitted: "it was organized many years ago; the medical profession was hardly represented; it was composed principally of lawyers, generals, etc." "Without a sufficient number of intelligent physicians, without chemists, without engineers, without architects! How could a board, deprived of the elements so necessary to form the very base of every sanitary system, exist in our day?" For want of these the Suprema Junta de Sanidad was removed in 1847, and with it went all our old sanitary organizations. As a tribute to the old organization, it is claimed that it possessed at least the quality of independence. It is contended that sanitary bodies should be fully independent in all questions relating to public hygiene, with no dependence on Governments, other than what is necessary to obtain its approbation of such reforms and regulations as the board would deem necessary. Such an organization would form the ideal system—*el bello ideal posible*—of a sanitary system.

(*To be continued.*)

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"Balked at the Crossing"—Shocking Railroad Accident.—When will people ever learn that the horse is one of the most timid and impressible of animals—that the spirit which he possesses and which makes him such a valuable and cherished servant, may be paralyzed by fear to such a degree as to lead to his own destruction and the destruction of those who depend upon him, through a want of knowledge of his nature? The following lesson is unfortunately frequent, in one phase or another, and susceptible of many applications:

SALEM, OHIO, July 11, 1881.

A horrible accident occurred yesterday afternoon at the Little Beaver crossing, on the Pittsburg and Fort Wayne Railroad, a short distance west of New Galilee. Several families of farmers were returning from church at the latter place when a horse belonging to one of their number, a wealthy farmer named Robert McChesney, balked at the crossing. The vehicle following, in which was a widow lady whose name was not learned, also stopped at the track. At this moment the Atlantic express train turned a sharp curve in the hills, and was on the party almost in a moment. Mr. McChesney, his daughter, aged nineteen, and the widow, were all struck by the locomotive and will probably die. Mr. McChesney had both legs broken. His daughter had one leg cut off, while the widow was injured internally. The crossing at which the accident occurred is peculiarly exposed. Passengers on the Atlantic express claim that the engineer whistled for the crossing, but it was apparently unheard.—N. Y. *Herald.*

MENU.

For Thickening Soups and Gravies, *Farina* is the best of all flours; but even this is improved by thoroughly drying or slightly browning over a slow fire just before use. Ordinary wheaten flour is prone to amass into disagreeable, pasty lumps.

Oaten Grits or "Groats" are the kernels, whole or broken, of oats when freed from the husk; differing very materially from the ordinary oatmeal of ground oats, which always contains more or less of the husks. The Scotch are reputed to always prefer the meal from the rough grain, which they boil for a long time, and by this means they say, obtain a thicker and sweeter porridge than can be obtained from meal prepared from the kernels only, and boiled for a short time. It may be said in general terms, the longer oatmeal is boiled (to from two to three hours), the more digestible it is. Ground oatmeal is commonly cooked in two principal forms—as porridge and cakes.

Oaten grits or "groats" may be very properly regarded as a refinement—a luxury and not a necessary food—since it involves the selection of the best and largest grain, and greater expense in its preparation. This food, as prepared by Messrs. Geo. V. Hecker & Co., of the famous Croton Mills, New York, is from the best oats obtainable, and when completely deprived of husks, the kernels are thoroughly kiln-dried or partially cooked. By this means it is converted into an eligible as well as excellent breakfast food, which may be cooked in half an hour. It will be all the better, however, if boiling water be added to it over night, and then boiled in a double kettle half an hour before breakfast. It is best served with milk, or may be eaten with cream and sugar.

Bound to Test It.—A story is told of a certain Russian prince at the head of the imperial colleges for girls, who was very diligent in performing his duties, that, one day, he determined to see for himself whether there were any grounds for the numerous complaints of the poor food furnished at a convent where 800 girls were being educated. Proceeding to the institution, just before the usual hour, he avoided the main entrance, and went straight to the kitchen. At the door he met two soldiers carrying a huge, steaming caldron.

"Halt!" he cried; "put that kettle down!"

The soldiers, of course, obeyed.

"Bring me a spoon," added the Prince.

The spoon was at once produced, but one of the soldiers ventured to begin a stammering remonstrance.

"Hold your tongue!" cried the Prince. "Take off the lid; I insist on tasting!"

No further objection was raised, and his Highness took a large spoonful.

"You call this soup?" he exclaimed. "Why, it is dirty water!"

"It is, your Highness," replied the soldier; "we have just been cleaning out the laundry."

Editor's Table.

***The Sentimentalism of Intemperance** — that it is a disease and not a vice—which is the chief theme of the reports of the superintendents of inebriate homes, is no doubt very comforting to many families afflicted by it; and at least equally comforting, though in a very different way, to some superintendents of such homes as report almost uniform success in the treatment of this most prevalent and most debasing of all "diseases"—bearing in mind that it is commonly only such "homes" as are under private management which have almost uniform success. Public or State institutions for the cure of inebriates are, for the most part, unsuccessful, and very costly. But this sentimentalism or apology for drunkenness—founded as we believe, much more upon kindly sympathy and interested motives, than upon the history and etiology of intemperance—is a growing and exceedingly mischievous means of promoting the very evil which it claims to avert. It would, indeed, be hard to imagine a more certain means of encouraging an inebriate than persuading him that he is in no way responsible for his inebriety. Or even the convivial tyro, imbue his mind with the thought that the appetite for liquor is natural and irresistible, and not acquired by indulgence, and he may be safely classed among the incurables, to be ever afterwards excused and provided for as a permanent boarder in some inebriate home; pitied and petted as an unfortunate invalid, instead of being regarded as a willful debaser of his name and race.

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* Inebriety a disease.—President's Anniversary Address, delivered before the American Association for the Cure of Inebriates, at Chicago, Ill., September 13, 1877, by Theodore L. Mason, M.D., of Brooklyn, N. Y. "Is Drunkenness a Disease? In the Sunday *Herald*, of April 24, 1881, there appeared an article from the pen of Mr. C. H. Bunting, under the above caption. Dr. Parker, of New York; Dr. T. L. Mason, of Brooklyn; Dr. Parish, of New Jersey; Dr. Crothers, of Hartford, and nearly every one of the many physicians connected with the American Association for the Cure of Inebriates, have read papers before the annual meetings of said association, and placed themselves on record, ... as believing that drunkenness is a disease .... Albert Day, M.D., Physician and Superintendent Washington Home, Boston." And here follows (in the *Herald* of May 25, 1881), a dissertation, purporting to fully illustrate and verify the conclusions of the authors quoted.

A Statistical Report of 252 *cases of Inebriety*, treated at the Inebriate Home, Fort Hamilton, L. I. (read before the American Association for the Cure of Inebriates, October 20, 1880), by Lewis D. Mason, M.D., Physician to the Inebriates' Home.

The first of the papers before us sets out with an endorsement of a postulate quoted from the "Preamble and Declaration of Principles" of the Plan of Organization of the American Association for the Cure of Inebriates, that: "1st. Intemperance is a *disease*, and 2d, it is curable in the same sense as other diseases are curable." And "that inebriety is a *disease*, is declared to be the great fundamental principle upon which the oldest, best established, best known, and most successful inebriate asylums in this country are based."

Numerous citations are made in verification of these declarations, all based upon conditions due to protracted intemperance; but none to show that alcohol can be compared to the particulate or septic cause of disease which, on once being introduced into the system, multiplies or magnifies like the leaven in the lump till the whole is leavened. Moreover, the author of this pamphlet, notwithstanding his unqualified committal to the maxim of his discourse, finds it necessary to explain its effects as "a disease," on the same ground, logically, as habitual gluttony, overwork, deprivation, or want of exercise may be the *cause of* disease.

.... "Not only its repeated use," he observes, "but its use in increasing quantities is necessary, in order to its especial effects, that the habit of using it to intoxication is, sooner or later, formed, and the man becomes an inebriate.

"This habit, however, in the stage we are now considering, is not uncontrollable by the subject of it. He has not yet lost the power of restraint over himself, nor is he necessarily incapable of understanding its debasing and destructive nature, or the cogency of the reasons why he should abandon it, but prefers to indulge his appetite. He knowingly exposes himself to temptation and the danger attendant upon indulgence. Use begets habit, and he becomes an inebriate; and in him *Inebriety* is a VICE. But this vicious habit thus engendered, if persisted in, sooner or later develops the full specific effects of the poisonous draught; and signally, and in a degree and order, and with a rapidity modified by the constitutional tendencies of the subject, it affects the great nervous centres, deranging their nutrition, destroying their normal and healthy functions, and, if not arrested, ultimately engendering in them organic and fatal disorder. This man is an inebriate, and his *Inebriety* is a DISEASE. He is no longer capable of sound reasoning. He has become insensible to the appeals of duty and affection, to the claims of his family, his fellowmen, his own welfare, or his duty to his Maker."

Such is *not* the progress of disease, but of *crime*, and by the substitution of this word for disease, and considering what is said of specific effects as figurative, we accept it as a good description of intemperance from beginning to end.

The statistical report of Dr. Lewis D. Mason is valuable, as showing the enormous amount of whisky consumed by habitual inebriates

—an average of one quart a day each; the intimate relations of inebriety with diseases of base habits; and the "hereditary tendency" —chiefly, we believe, due to the social environment of intemperance.

That the victim of intemperance commonly suffers physical deterioration *pari passu* with his indulgence, and that by persistence his physical structure undergoes changes which result in disease; and that the progeny of drunkards, or of persons in a state of intoxication, are predisposed to intemperance; that they are particularly liable to idiocy and insanity, or, at best, to feeble intellects and frail bodies, is, indeed, painfully true. But to reason from these premises that intemperance is to be treated *ab initio* as a disease, and not a vice, is to make the will subordinate to habit, is to accept the progeny of the inebriate as the type of manhood, is to assume an incapacity for conscious purpose (the condition of a person in an actual state of intoxication), as the measure of the human will. Granted these propositions, then all inebriates are monomaniacs, at least, if not generally insane; a conclusion utterly preposterous, for every disinterested observer knows to the contrary. And few indeed must be the number of observers who cannot recall examples of reform in inebriates by timely chastisement. Insomuch we are fully of the opinion that if intemperance were treated as a crime, and made punishable, the treatment would be manifold more efficacious in the cause of reform than inebriate homes.

The following characteristic instance is cited from high authority:

"I had a marine," said Capt. Drew, "who was constantly complained against for quarreling, and fighting, and disobedience to the orders of his sergeant. At length I began with flogging him, and told him that I would increase his punishment every time that I had a complaint against him. This I had to do twice; and as the man was constantly excited, it appeared to me the man's reason was affected. I therefore applied to the surgeon, and asked him to examine the man, to see whether he was not a fit subject for invaliding; but the surgeon reported that he was as fine and healthy a young man as there was in the ship. I then did not think myself justified in flogging him again, but took upon myself to do an illegal act with a good intention; and when we came into the harbor I hired a cell in the jail, and kept him there three days upon bread and water. When the man came out of jail, I told him that whenever I had a complaint against him, as sure as we came into harbor I would send him to jail; but that if he would choose to alter his conduct, I would start afresh with him, and forget everything that had happened. He said that he was very much obliged to me; and he came to me the next day, and asked me if I would stop his allowance of grog, and let him be paid for it. I did so, and never had another complaint against the man while I was in the ship."*

* Mental Physiology, by William B. Carpenter, M.D., LL.D., F.R.S., F.L.S., F.G.S., etc., etc., p. 650.

Old navy could cite many similar cases, which, though not in advocacy of the return to the old methods of naval discipline generally, would admirably well illustrate the salutary results of treating every act of intoxication as a crime subject to punishment. Moreover, observation need by no means be limited to such sources. As good and as old an authority as the celebrated Dr. Benjamin Rush, in enumerating the remedies for drunkenness, prescribes: "A severe whipping. This remedy acts by exciting a revulsion of the blood from the brain, to the external parts of the body." And, as illustrating the power of the will in the habitual inebriate (when not drunk), he cites the case of a citizen of Philadelphia, who had made many unsuccessful attempts to cure his wife of drunkenness. "At length, despairing of her reformation, he purchased a hogshead of rum, and, after tapping it, left the key in the door of the room in which it was placed, as if he had forgotten it. His design was to give his wife an opportunity of drinking herself to death. She suspected this to be his motive, in what he had done, and suddenly left off drinking. And many hundreds of drunkards," he remarks, "have been cured of their desire for ardent spirits by a practical belief in the doctrines of the Christian religion." (Rush's Works, Vol. I., pp. 376–382.) These views are thoroughly consistent with the objects and success of the recently established Church Temperance Society, which directly appeals to the religious sentiment through the exercise of the will.

Notwithstanding, there are even advocates against punishment for crimes committed by persons in a state of intoxication, on the ground that such persons are in a state of "temporary insanity." The arguments in support of this proposition are of a piece with those which would hold the distiller or seller of the liquor responsible, instead of him who drinks it. Why not, on the same want of consistency, hold the manufacturer or seller of fire-arms guilty of every case of murder or suicide committed by the use of such fire-arms? And granted the "temporary insanity," what should be the retribution to him who brought it about—who voluntarily placed himself in the condition to debase his race—to commit murder—to wreck a train of cars or to sink a ship.

Alas, drunkenness is the crime of crimes in civilized society; and the sooner both individual and public effort is exercised towards making it odious and punishable, instead of respectable and excusable, the better for the good of mankind.

The Long Island College Hospital, Brooklyn, N. Y.—It is now twenty-three years since this institution was organized, and the success hoped for at its beginning has been fully realized. The founders of the school determined to combine clinical with didactic

teaching, so that students could acquire a knowledge of the art as well as the science of medicine. This was a step in advance of the medical schools generally in this country, and, like all efforts at true reformation, was not expected to be immediately popular. However, the school has had a continuous growth during its whole existence, and since the demand for higher medical education has become more pronounced, it has rapidly grown in general favor.

The number and character of students in attendance during the past seven years show plainly that the system of education adopted twenty-three years ago, and perfected in recent times, is such as the present state of the profession and people demand.

Among the superior educational advantages offered in this institution the following may be mentioned:

The graded system of instruction, in which the junior students are confined to the primary branches, which are mainly taught by recitations from standard text books. The division of the senior class into sections of ten or more, who accompany the clinical teachers in their daily hospital service. By this system of regular rotation, from the medical to the surgical departments, the student receives the largest possible amount of instruction daily in all the practical branches. This mode of teaching is greatly superior to mere amphitheatre lectures, which, although employed for ages, have ever failed to accomplish work that can only be done in the wards of a hospital.

In order to fully carry out the plan of instruction, a number of lecturers and clinical assistants were added to the regular faculty. These have proved competent and valuable in conducting the reading and recitation exercises and class examinations. The result is, that the number of students has increased, until larger college and hospital accommodations have become necessary.

"Donations of money have recently been made by the Regents, Council, Faculty and Alumni, for the purpose of making large additions to the college and hospital buildings. These are being made at the time of issuing this circular.

"The new portion of the college will consist of a lecture room, two large recitation rooms, chemical, physiological and histological laboratories and museum.

"The central part of the hospital is being rebuilt and enlarged, which will give three new general wards and a number of small wards for private and special cases.

"There will be twelve new rooms to be devoted to class exercises in clinical practice among the out-door patients.

"Such improvements will secure complete facilities for carrying out the most improved methods of medical education." The future prosperity of the Long Island College Hospital appears to befully assured.

The State Boards of Health and their Secretaries.

Alabama, T. A. Means, M.D., Montgomery.
Arkansas, J. A. Dibrell, M.D., Little Rock.
California, F. W. Hatch, M.D., Sacramento.
Colorado, F. J. Bancroft, M.D., Denver.
Connecticut, C. W. Chamberlin, M.D., Hartford.
Delaware, Wm. Marshall, M.D., Dover.
Georgia, V. A. Taliaferro, M.D., Atlanta.
Illinois, John H. Rauch, M.D., Chicago.
Iowa, R. J. Farquharson, M.D., Muscatine.
Kentucky, Jno. J. Speed, M.D., Louisville.
Louisiana, S. S. Herrick, M.D., New Orleans.
Maryland, C. W. Chancellor, M.D., Baltimore.
Massachusetts, Chas. F. Folsom, M.D., Boston.
Michigan, Henry B. Baker, M.D., Lansing.
Minnesota, Chas. N. Hewitt, M.D., Red Wing.
Mississippi, Wirt Johnston, M.D., Jackson.
New Jersey, E. M. Hunt, M.D., Metuchen.
New York, Elisha Harris, M.D., Albany.
North Carolina, Thos. F. Wood, M.D., Wilmington.
Rhode Island, Chas. H. Fisher, M.D., Providence.
South Carolina, H. D. Fraser, M.D., Charleston.
Tennessee, W. M. Clark, M.D., Nashville.
Virginia, ——, Richmond.
Wisconsin, J. T. Reeve, M.D., Appleton.
West Virginia, Jas. E. Reeves, M.D., Wheeling.
Indiana, T. M. Stevens, M.D., Indianapolis.

The New York Board has continued its efforts against public nuisances, particularly Hunter's Point, but there has been no perceptible change other than what may be attributed to cooler weather, which renders the odors less offensive, but it will probably gain for the perpetrators the credit of paying some attention to the mandates of the health authorities, while they are likely to go on as heretofore, evolving odors of varying intensity with the temperature of the atmosphere.

The Chemung Canal nuisance, we are gratified to learn, has been almost wholly abated, by eighteen miles of drainage through four townships. And similar work is in progress between Dansville and Mount Morris, and in contemplation for other malarious regions, where influences such as those which obtain at Hunter's Point do not prevail.

The Board has also proceeded with the detail for effective work for the prevention of adulterations of food, drugs, etc. The different subjects to which the law relates have been grouped, and referred as follows:

1.—Milk: Fresh and Condensed.—Prof. Chandler.

2.—Butter: Dairy and Artificial; Cheese, Lard, Olive Oil, and Fruit Essences.—Prof. Caldwell.

3.—Canned Meats and Animal Foods: Meats.—Fresh, Smoked, Salted, Canned; Extracts and Essences of Meat and Fish; Gelatin, and Isinglass—Prof. Chester.

4.—Cereals, and the products and accessories of Flour, and Bread Foods; Wheat; Rye; Barley and Rice; Oat-meal; Corn-meal; Sago; Tapioca and Leguminous preparations; Special Artificial Foods for Infants and Invalids; Baking Powders; Cream Tartars; Bicarbonate of Soda; Bicarbonate of Ammonia; Alum Powders and the "Alum question."—Dr. Love.

5.—Canned Fruits and Vegetables; Preserves; Vinegar; Pickles; Mustard; Ginger; Spices; Antiseptics employed in preserving; Glazing and Enamel, as affecting Food Articles.—Prof. Lattimore.

6.—Sugars; Syrups; Molasses; Glucose; Confectionery; Honey; and Soda-Water Syrups.—Dr. Pitt.

7.—Tea; Coffee; Cocoa.—Prof. Lattimore.

8.—Wines; Beers; Spirits and Cordials.—Dr. Engelhardt.

9.—Crude Vegetable and Animal Drugs.—Dr. Hoffmann.

10.—Pharmaceutical Chemicals and their Preparations.—Dr. Hoffmann.

11.—Organic Preparations, employed in Medicines; Compounds and Simples—whether sold as such or in preparations, etc.; *Alkaloids; Organic Acids;* Compound Ethers and Essences.—Prof. Caldwell.

Water Analysis is referred to Prof. Elwyn Waller, of the Columbia College School of Mines, New York, who, on application by local health authorities who may require it, "*will forward the necessary directions and sealed vessels for samples of water to be analyzed.*"

Connecticut Board, reports for July, no additional epidemics of small-pox; the usual prevalence of diarrhœal disorders, more dysentery, often of a severe type, whooping cough rife in a few towns, but little of measles or scarlet fever. The usual instances of outbreak of filth diseases at populous health resorts, caused by negligence in the disposal of excreta and garbage, have occurred, chiefly diphtheria and diarrhœal diseases, and a few cases of typhoid fever. Malarial diseases appear to have taken a step eastward and northward, as far as Norwich; but none yet east of the Thames River; in Bloomfield, New Canaan, Unionville, and other towns in various parts of the State, they are increasing; while in Clinton and Guilford they are decreasing, and in Collinsville have entirely ceased.

Other State Board correspondence, since September issue, we regret to say, is too late for summary in this number.

The Report of the State Board of Health of Tennessee, 1877-'80, in a well gotten-up 12mo volume of 570 pages, illustrated by diagrams and maps, opens with a sketch of the first Board of Health established in Tennessee, in Nashville, June 5, 1866, and of the progress of public hygiene in the State since that time—there

being, at the conclusion of the period covered by this report, 55 local boards in co-operation with the State Board, which was established in 1877; but, at first, without any appropriation by the legislature for its support. This was first given in March, 1879, in virtue, apparently, of the terrible epidemic of yellow fever of the preceding year. The essential features of the law establishing the State Board are given in the Secretary's report, together with the organization and effective work of the Board in the trying ordeal of 1879—with which the readers of THE SANITARIAN are, for the most part, already familiar.

Vital Statistics is very fully reported upon, by Dr. J. D. Plunket, member of a committee on the subject, comprehending a condensed report of the proceedings of the conference called by the National Board of Health, at Washington, in May, 1880, followed by the outline of a registration law, commended to the legislature of the State.

Jas. M. Safford, Ph.D., M.D., member of the board, contributes an instructive paper on the *Geological and Topographical Features of Tennessee in Relation to Disease.* These features he divides and maps into eight parts, with their differences in regard to altitude, soil, watershed, vegetation, climate, etc., and the relation of these differences to prevailing diseases, on a small scale, as compared with the Census Atlas of 1870. The subject is carefully presented, and we are gratified to notice that its pursuit is to be continued.

Memphis: Sanitation and Quarantine, 1879–'80, by G. B. Thornton, M.D. (the same as published in THE SANITARIAN, February number, current year); The Yellow Fever in Tennessee during the Summer of 1879, by J. D. Plunket, M.D., and the *Yellow Fever in Tennessee, outside of Memphis, in* 1879, comprehended in various short reports, are all valuable contributions to the general subject of the report—the unsanitary conditions which constituted the basis of the most widespread and fatal epidemic of yellow fever which ever prevailed in the State. Appended to the general report are several letters from correspondents, justifying the action of the State Board of Tennessee in self-protection last year, against the inefficiency of the quarantine as maintained by the State Board of Louisiana.

Key West, Fla., should be regarded and treated as a suburb of Havana. The health officer of the port was recently dismissed by the civil authorities for declining to give a clean bill of health in the face of yellow fever, and another appointed, willing to subserve the interests of authorities who rate business above human life.

A la Cesspools.—"You must admit, Jim Webster, that you stole those pullets," said the Galveston Judge to the culprit. "Jedge," responded Jim, "I don't really believe I stole dem chickens. In de fust place, Jedge, nobody saw me take 'em. In the next place dey could not be found on my premises, because I had done hid dem chickens under de floor. I can't help believin', Jedge, dat I is innocent as a lamb."—*Galveston News.*

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending August 20, 1881. **Abbreviations:** c, consumption; a l d, acute lung diseases; s f, scarlet fever; ms, measles; w c, whooping cough; d-c, diphtheria and croup; t f, typhoid and typhus fevers; s p, small pox; y f, yellow fever; ch, cholera; dl d, diarrhœal diseases; ml f, malarial fever; c d, contagious diseases.

Atlanta, Ga., 37,421: 16; 5; 22.0.—
Baltimore, Md., 332,190: 196; 101; 30.7.—dl d, 41; t f, 11; d-c, 15.
Boston, Mass., 362,535: 212; 113; 30.5.—dl d, 80; c, 35; d-c, 7.
Brooklyn, N. Y., 566,689: 288; 175; 27.5.—dl d, 76; d-c, 18; sp, 1.
Buffalo, N. Y., 155,137: 106; 63; 35.6.—dl d, 37.
Cambridge, Mass., 52,800:
Camden, N. J., 41,658: 19; 8; 23.8.—
Charleston, S. C., 49,990: 45; 12; 46.8.—
Chicago, Ill., 503,304: 360; 241; 37.3.—dl d, 114; s p, 20; t f, 19.
Cincinnati, O., 255,708: 114; 57; 23.3.—dl d, 17; t f, 12; d-c, 3.
Cleveland, O., 160,140: 115; —; 37.5.—dl d, 36; t f, 5.
Dayton, O., 38,677: 10; 4; 13.4.—
Dis. Columbia, 180,000: 87; 47; 25.1.—dl d, 22; ml f, 8; t f, 3.
Evansville, Ind., 29,280: 13; —; 23.2.—
Fall River, Mass., 49,000: 30; 18; 32.0.—
Hudson Co., N. J., 187,950: 124; 62; 34.4—dl d, 28; s p, 2.
Indianapolis, Ind., 75,074: 24; 9; 16.6.—
Kansas City, Mo., 60,000:
Lawrence, Mass., 39,178: 12; 5; 16.0.—
Louisville, Ky., 123,625: 58; 33; 24.5.—t f, 5; ml f, 4; dl d, 14.
Lowell, Mass., 59,485: 35; 21; 30.7.—dl d, 13.
Lynn, Mass., 38,284: 25; 12; 34.1.—dl d, 9.
Memphis, Tenn., 33,593: 28; 16; 43.3.—dl d, 4.
Milwaukee, 115,578: 73; 51; 32.7.—dl d, 13.
Mobile, Ala., 31,205: 13; 4; 21.7.—
Nashville, 43,461: 16; 8; 30.9.—dl d, 5.
Newark, N. J., 136,400:
New Haven, Conn., 62,882: 18; 4; 14.9.—
New Orleans, La., 216,140: 123; 40; 29.6.—ml f, 10.
New York, 1,206,577: 682; 350; 20.5.—dl d, 157; t f, 7; ml f, 14; s p, 6.
Omaha, Neb., 30,518: 22; 16; 26.6.—
Philadelphia, Pa., 846,980: 400; 192; 24.6.—dl d, 64; t f, 20; s p, 10.
Pittsburg, Pa., 156,381: 100; 53; 33.4.—dl d, 19; t f, 10.
Portland, Me., 33,810: 10; 8; 15.4.—
Providence, R. I., 104,852: 61; 29; 30.3—dl d, 16.
Richmond, Va., 63,803: 31; 15; 25.4.—
Rochester, N. Y., 89,363: 37; 17; 21.6.—
Saint Paul, Minn., 41,498; 30; —; 37.5.—
San Francisco, Cal., 233,956: 69; 22; 15.4.—s p, 3.
Savannah, Ga., 30,681: 15; 5; 25.5.—
Springfield, Mass., 33,340: 11; 5; 17.2.—
St. Louis, Mo., 350,522: 172; 80; 25.6.—ml f, 15; t f, 53.
Utica, N. Y., 33,913: 2; 1; 3.2.—
Wilmington, Del., 42,499: 25; 8; 30.7.—s p, 4.
Worcester, Mass., 58,295: 30; 17; 26.5.—

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at latest weekly returns received.

Alexandria, Egypt, 212,034, Aug. 6, 179; 43.9.—t f, 14.
Amsterdam, Holland, 326,203, Aug. 13, 140; 22.3.—
Antwerp, Belgium, 179,034, Aug. 6, 101; 29.4.—
Barcelona, Spain, 260,000, Aug. 13, 132; 26.4.—
Belfast, Ireland, 207,671, Aug. 20, 76; 19.0.—
Berlin, Germany, 1,123,577, Aug. 13, 768; 35.5.—d-c, 21, s f, 15.
Birmingham, England, 402,296, Aug. 20, 154; 20.0.—
Bombay, India, 644,535, July 26, 437; 35.3.—t f, 110; ch, 62.
Bremen, Germany, 114,000, Aug. 13, 48; 21.9.—
Breslau, Germany, 273,000, Aug. 20, 214; 40.7.—
Bristol and Clifton, England, 217,185, Aug. 20, 71; 17.9.—
Brussels, Belgium, 165,366, Aug. 20, 69; 21.7.—
Bucharest, Roumania, 200,000, Aug. 13, 82; 21.3.—
Buda-Pesth, Hungary, 370,370, Aug. 13, 295; 41.5.—dl d, 100; s p, 3.
Calcutta, India, 429,535, July 16, 191; 23.2.—f, 49; ch, 16.
Christiania, Norway, 120,000, Aug. 13, 37; 16.0.—
Copenhagen, Denmark, 235,254, Aug. 16, 92; 20.3.—
Dresden, Saxony, 220,216, Aug. 20, 151; 35.7.—
Dublin, Ireland, 348,525, Aug. 20, 100; 14.9.—
Edinburgh, 229,030, Aug, 20, 73; 16.6.—
Genoa, Italy, 180,625, mo. of April, 335; 22.3.—
Glasgow, Scotland, 512,034, Aug. 20, 194; 19.7.—
Havana, Cuba, 195,437, Aug. 19, —; —; y f, 40.
Lisbon, Portugal, 203,681, July 23, 103; 26.3.—
Liverpool, England, 553,988, Aug. 20, 296; 27.9.—ms, 12; s f, 10.
London, 3,829,751, Aug. 20, 1,474; 20.1—s p, 38; s f, 51; ms, 58.
Lyons, France, 342,815, Aug. 13, 208; 31.6.—t f, 14.
Madras, India, 397,552:
Malaga, Spain, 115,882, Aug. 14, 102; 45.8.—t f, 7.
Montreal, Canada, 140,000: July 30, 92; 34.9.—t f, 2.
Munich, Germany, 230,000, Aug. 13, 172; 38.9.—
Paris, France, 1,988,806, Aug. 18, 1,024; 26.8.—t f, 50; s p, 14.
Rio de Janeiro, Brazil, 335,000, July 30, 192; 30.3.—
Rome, Italy, 305,469, July 9, 154; 26.2.—
Stockholm, Sweden, 169,429, Aug. 13, 60; 18.6.—
St. Petersburg, Rus., 669,741, Aug. 13, 662; 51.4.—t f, 101.
Trieste, Austria, 128,295, Aug. 13, 77; 28.2.—
Turin, Italy, 236,658, July 16, 136; 29.4.—
Venice, Italy, 141,615, July 30, 78; 28.4.—
Vienna, Austria, 731,191, Aug. 13, 380; 27.0.—s p, 8.
Warsaw, Rus. Poland, 357,169, Aug. 6, 318; 43.7.—s p, 9.

The six healthiest cities in the United States, as measured by the above and most recent authentic reports, up to the time of going to press with this number, were, in the order named:

UTICA, DAYTON, NEW HAVEN, PORTLAND, SAN FRANCISCO, and LAWRENCE.

The Six Unhealthiest were:

CHARLESTON, MEMPHIS, CLEVELAND, CHICAGO, HUDSON CO., N. J., and LYNN.

The Six Unhealthiest in the World were:

ST. PETERSBURG, CHARLESTON, MALAGA, ALEXANDRIA, WARSAW and BUDHA-PESTH.

Wilmington, N. C.—*The Evening Review*, of Wilmington, N. C., gently takes THE SANITARIAN to task for not adding *Del.* to Wilmington, in its last month's summary of the unhealthiest cities in the world, for the time being, lest some readers might mistake Wilmington, N. C., for it. We are sorry that that relatively he althy city, Wilmington, N. C., has not the population requisite to bring it within the scope of our monthly summary of "*Cities of* 30,000 *Population and Upwards*," in which category Wilmington, Del., is named. Moreover the first line of the sentence at the foot of the tables, designating the cities referred to by the *Review*, is: "A particularly noticeable feature in the foregoing tables." In view of such particularity, it is surely apparent to any intelligent reader, that the addition called for would have been superfluous. Following the complaint, the *Review* gives the mortality of Wilmington for the same period at *nine per thousand*, and proceeds to compare this rate with the rates of the larger cities enumerated in our tables. Wilmington, N. C., has a population of 17,361, only, and her death rate for the week ending July 16 (the date of the summary under consideration), was, EIGHTEEN AND ONE-TENTH PER THOUSAND, a little more than twice the rate given by the *Review*. But still excellent: there being but one other southern city, of approximate size, equal to it. San Antonio, Texas, (population 20,561) reported for the same week, a rate of 18 per 1,000.

The time is not far distant ere THE SANITARIAN will so enlarge its borders, as to comprehend a monthly summary of the mortality statistics of cities under, as well as over, 30,000, when Wilmington, N. C., will receive its wonted attention.

Literature.

The Transactions of the Medical Society of the State of N. Y., 1880, constitute a handsome octavo volume of 673 pages. After the minutes, the usual reports of Standing Committees are given, and among them, an unusual feature, is the "Report of the Committee on Honorary Necrology." The report is made in compliance with a resolution of the Society calling for "the names of mem-

bers of the State and County Societies who have lost their lives in the pursuit of science, from exposure to epidemics, or in the service of their country, that such list may be preserved and published in the Transactions of the State Society." In their report the committee state: "It is too evident to need illustrating that our profession does not hold, in the public estimation, the rank it is entitled to, and that all proper means should be taken to raise it to such rank. In Great Britain, clergymen and lawyers are ranked as gentlemen; physicians are not." Among the names in the roll of honor are those of several regimental surgeons who died from injuries or disease contracted while on duty with their regiments. Not inferior in manly heroism and disinterested self-devotion, were those who volunteered their services at the Quarantine Hospital for the port of New York, to attend the patients suffering from ship fever.

The committee "report as also entitled to enrollment: Dr. N. Gerhard Hutchison, of Brooklyn, who died of diphtheria, April 10th, 1877, having contracted the disease by uninterrupted and sleepless attention to a case of tracheotomy in that disease, performed by him to save a child under his care."

The President's Address has many useful and timely suggestions, and among them:

"1. That, for the present, the minimum qualifications for admission (to medical schools) shall be equal to those required by the best literary colleges in the Union, and that after four years, the possession of the degree of B.A. or B.S. shall be exacted.

2. That a complete graded system shall be adopted.

3. That the course of instruction shall extend at least three years of nine months each.

4. That constant attendance at lectures and weekly oral and monthly written examinations shall be required of every student.

5. That anatomical, chemical and histological work shall not be optional.

6. That satisfactory examinations in each subordinate grade shall precede advancement to a higher grade.

7. That the final examination for a degree shall be by an independent Board appointed by the Regents of the University."

It is claimed that the object of the changes here proposed, is to make the schools illustrious centres of attraction, where the worthy student could receive the best equipment, and where the incompetent and lazy and worthless would be plucked without mercy.

The first among the contributions to the Society is "On the Relations Between Imperfect Action of the Ocular Muscles and Functional Nervous Diseases," by Dr. G. T. Stevens, of Albany. The subject is

a very interesting one and earnestly discussed, but his premises are too broad.

"Forced Alimentation," by Dr. Alexander Hutchins, of Brooklyn, is written with the usual facility of its author, and displays an amount of accurate and careful observation rarely met with in the current literature of the day. This method of treating the subject makes it as interesting to the hygienist as to the clinical observer. Many of the statements made are simply truisms that nobody disputes, yet which few seem to consider, while others are the contradiction of professional as well as of popular fallacies which have acquired nearly the force of axioms. Take the following statement: "It is the popular opinion that food should not be taken when the desire for food does not exist. It is the object of this paper to hint at certain clinical facts that prove the contrary of this opinion, and point to forced alimentation as a therapeutic agent. It is possible that the practice herein indicated may be generally followed; but, if so, even the fugitive literature of the profession is barren of the fact."

The author associates impaired nutrition with a wide range of chronic diseases and with conditions usually described as "poor health," and remarks that the sufferers are generally irregular, fickle and imperfect feeders. The truth of the following statement will be endorsed by every sanitarian: "An *individual* with an intelligent and vigorous appetite, whose nutritive functions are accurately performed, one meets with, but not too often; a *family* that gathers around a judiciously furnished table, at regular intervals, and does uniform justice to the spread, with zest and energy, one meets with but rarely." There is a large variety of disordered conditions, unaccompanied by organic disease, to a very large extent the result of defective nutrition, that can be overcome by a properly selected dietary, systematically arranged and rigidly enforced. Can these conditions be overcome by forced feeding? This object must be attained by the skilled physician exercising his experienced authority in constructing the details of a dietary, and insisting on implicit and unquestioning obedience thereto. Authority and persuasion must go hand in hand. "In the multitude of homes, where the indiscretion of parents has relaxed authority in the matter of feeding, and a race of imperfectly nourished children is losing vigor day by day, to demand that these parents shall revolutionize themselves, insist on their children eating a proper breakfast, provide a suitable lunch for the school recess, and make sure that it is eaten, and follow up the regime till the end is gained, is a revolution in morals, the magnitude of which is known only to the physician whose intelligence and conscience have determined him to carry it through." The inheritors of certain constitutional taints

are notoriously light and fickle feeders, hence the necessity of recognizing this principle as a valuable adjunct in resisting certain influences of heredity.

It is impossible to do justice to this paper without giving it in full. The sentences are so compact that the ideas are shorn of much of their force when qualifying phrases are omitted in the endeavor to condense them.

"Rectal Feeding in Disease," by Dr. W. W. Porter, of Batavia, will well repay an attentive reading.

Very many of the contributions to the volume are written by specialists. Many of them are by well-known oculists, and cannot fail to interest those engaged in the study of ophthalmology.

Dr. Bull, of New York, contributes a paper on the "Removal of Foreign Bodies from the Eye," and Dr. Prout, of Brooklyn, describes the removal of a piece of steel from the interior of the eyeball, and gives a suggestive paper on the "Lachrymal Conjunctivitis—Operations on the Puncta Lachrymalia and Canaliculi."

A contribution which will interest the general practitioner, the hygienist and the public generally, is from the pen of Dr. D. B. St. John Roosa, "On the Evil Consequences of Neglected Colds in the Head." The following extract from an imaginary autobiography of a child, will throw much light on the Doctor's proposition: "I was half nourished at the breast; I was nursed too long by a delicate and over-worked mother; once away from maternal care I was allowed to have the run of the table, or I was not obliged to eat if a little disinclined to; insufficiently clad in winter, there was no careful supervision of my habits of playing; I was allowed to sit down in the wet or cold when overheated; I was not taught to take off my stockings and shoes and dry my feet when they had been thoroughly wet. . . ."

In such cases the first symptoms are usually neglected for weeks by the friends of the sufferer, and when the doctor is called he pronounces it to be only a cold in the head. The author regards the prevention of colds in the head as a matter of individual hygiene. Public sentiment must be controlled on this, as on other sanitary questions, by the medical profession. A robust constitution is the best safeguard against this disease as it is against all others. Dr. Jacobi indorsed the suggestion that even constitutional elements may follow simple nasal catarrh.

"The Care of the Sick Poor:" Annual Address delivered before the Oneida County Medical Society, July, 1879, by the President, Dr. E. Hutchinson, of Utica, is a paper of great interest to the hygienist, as well as to those interested in medico-legal questions.

The Report of the Committee of Hygiene is very long, filling fifty

pages of the volume. Some of the matter is good—very good, and some—not so good. It comprises five distinct papers. The first by Dr. Jewett, of Canandaigua, on "The Duties of Medical Men in Relation to School Hygiene." The paper opens with a paraphrase of Pettenkofer's first lecture on "The Value of Health to a City." There is little to be said on this subject that is new. The demand now is to reduce theory to practice.

The second paper is the "Report of the Committee on Hygiene of the Medical Society of the County of New York, by Dr. J. C. Peters, Chairman of the Committee."

Referring to street-sweepings, ashes, and garbage, the report says: "Your chairman is fully convinced, from the observations made in other cities, at home and abroad, that all the street-sweepings, offal, garbage, and ashes, can be disposed of to responsible parties in this and adjacent counties, to great advantage, and at a much less expense —approaching a saving of several hundred thousand dollars per year —than according to the present costly and wasteful method of towing them down to the sea." The author would thus prevent the pollution of the harbor and the sea-shore, and do away with the nuisance of dumping-places within the city limits. "Great injury is done to the commerce of the city, and great damage to the health of crews and passengers who are obliged to voyage in vessels which have lain in our filthy dock-waters." It is thought that New York contains as much of the elements of unhealthiness as Havana, if it were in a tropical climate; and special reference is made to the foul water coming from the Rector Street sewer, in which the Havana steamers are obliged to lie.

Manufacturing establishments, slaughter-houses, stables, and the like are fully considered. The complaints against these nuisances have been so often urged that the profession and the public are familiar with them.

> "No! though compell'd beyond the Tiber's flood
> To move your tan-yard, swear the smell is good—
> Myrrh, cassia, frankincense; and wisely think
> That what is lucrative can never stink."

The next paper of the Report, "On the Prevention and Stamping Out of Certain Zymotic Diseases, Especially Scarlet Fever, Measles, Whooping-cough, and Diphtheria." The two great methods of protection, isolation and disinfection, are fully considered. Everybody knows what isolation or complete separation from the family means, but few have sufficient firmness and energy to enforce it thoroughly. It is just one of those cases in which neglect of one point renders observance of all the others almost useless; for if the disease is commu-

nicated to any one outside of the sick room, no one can tell how far it may spread, and as it can neither be seen, felt, nor smelled, it can do an immense amount of mischief before it is suspected.

With regard to ærial disinfectants, and the fixative disinfectants, comprising the inodorous metallic salts, it may be safely affirmed that they can be rarely efficiently applied except under the immediate direction of the intelligent and experienced physician. The necessity for absolute cleanliness in every particular is forcibly insisted on, because the author believes that "all infectious and contagious diseases, including small-pox, measles, scarlet fever, and diphtheria, were once filth diseases, as much as typhus, typhoid, and yellow fever, and cholera are now."

The writer then describes the great Plague of Athens, the epidemics of the middle ages, the social habits of Madrid, London, and even the presence-chamber of Queen Elizabeth, and traces the history of epidemics down to Memphis. To this description might be applied if we change the person:

"Bona bene ut malos descripsit mores."

The personages in both cases are, no doubt, equally familiar with the scenes which they describe.

"Hygiene" is the title of a paper by Dr. J. Vedder, of Saugerties. The last communication on the subject of hygiene is: "A Proposed Drainage Law for the Promotion of Public Health," by Dr. A. N. Bell, editor of THE SANITARIAN. It is entitled, "An Act to Provide for the Proper Drainage of Land; and Filling of Ponds and Low Lands, for the Promotion of the Public Health."

The proposed act very wisely makes it the duty of the health authorities in every city, town, or district to determine the existence of such a condition as may be injurious to the public health, and then makes it obligatory on the civil authorities to remove the evil thus specified.

There are many other articles of very great value, but they do not come specially within the sphere of THE SANITARIAN. T. P. C.

Duhring's Atlas of Skin Diseases.*—Parts VIII and IX, now before us, complete this admirable work. Part VIII represents *Erythema Multiforme* (Papulosum), *Psoriasis, Sypholoderma* (Tuberculosum), *Tinea Tricophytina* (Circinata et Tonsuraus). Part IX:

*Atlas of Skin Diseases. By Louis A. Duhring, M.D., Professor of Skin Diseases in the University of Pennsylvania; Consulting Physician to the Philadelphia Dispensary for Skin Diseases; Dermatologist to the Philadelphia Hospital; Author of "A Practical Treatise on Diseases of the Skin," etc. Philadelphia: J. B. Lippincott & Co.

Eczema (Rubrum)—two plates—*Pamphigus* and *Ecthyma*. Of both parts, the plates are characterized by the same life-like delineations which we have taken occasion to notice in the preceding parts throughout—a truthfulness to nature rarely equaled, and surely not surpassed by any other work. To Part IX, is added a table of contents, and a classified arrangement of the plates for binding. Seven of the nine classes of skin diseases are represented in the Atlas—the hyperemias and the neuroses alone being unrepresented. Eczema, as the most common of skin diseases, and the one which most frequently engages the attention of the practitioner, is represented in all its forms by eight plates. Syphilis, six, and the other diseases by two or one each; all with just so much of descriptive text as best serves to render the work eminently practical, and to fix it in all respects at the very acme of authorities on skin diseases. Of the mechanical work, it will suffice to state, it is in keeping with the author's, and fully sustains the reputation of the house.

The Diseases of Old Age, by Charcot and Loomis,* and **Diseases of the Bladder, by Coulson,†** are the 3d and 4th volumes of the current series of Wood's Library of Standard Medical Authors. Both on subjects, and by authors so well known to the medical profession, as to scarcely need any other notice than mere announcement. The work on the Diseases of Old Age contains twenty-one lectures by Professor Charcot, the first on the general characteristics of senile pathology, and the second on the febrile state in the aged. The next sixteen are on gout and rheumatism—with their symptomatology, pathology and treatment. The remaining three are on the clinical importance of thermometry in old age. Professor Loomis follows with ten lectures on other diseases common to old age: pneumonia, chronic catarrh of the bronchi, asthma, athero-

* Clinical Lectures on the Diseases of Old Age, by J. M. Charcot, M.D., Professor in the Faculty of Medicine of Paris; Physician to the Salpêtrière; Member of the Academy of Medicine; of the Clinical Society of London; of the Clinical Society of Buda-Pesth; of the Society of Natural Sciences, Brussels; President of the Anatomical Society, etc., etc. Translated by Leigh H. Hunt, B. Sc., M.D., Laboratory Instructor in Pathology in the Medical Department of the University of New York. With additional Lectures by Alfred L. Loomis, M.D., Professor of Pathology and Practical Medicine in the Medical Department of the University of the City of New York; Consulting Physician to the Charity Hospital; to the Bureau of Out-Door Relief; to the Central Dispensary; Visiting Physician to the Bellevue Hospital; to the Mount Sinai Hospital, etc., etc. 8vo., pp. 280. New York: William Wood & Co.

† Diseases of the Bladder and Prostate Gland. 6th edition. Revised by Walter J. Coulson, F.R.C.S., Surgeon to St. Peter's Hospital for Stone, etc., and Surgeon to the Lock Hospital. 8vo., pp. 393. NewYork: William Wood & Co.

ma, fatty heart, cerebral hemorrhage, apoplexy, cerebral softening, chronic gastric catarrh, constipation and hypertrophy of the prostate gland. Diseases of the Bladder opens with a chapter on the general anatomical and physiological relations of the subject. The second chapter treats of the method of examining the bladder and prostate gland. The remainder is devoted to the various abnormities, injuries and diseases of the bladder, and their treatment. About 160 pages are taken up with the consideration of calculi—their removal and prevention. Four chapters are devoted to the diseases of the prostate gland.

Both works are gotten up in the excellent style adopted at the beginning of the series, illustrated with excellent wood cuts, wherever necessary.

The Globular Composition of the Blood and Milk,* contributes to our knowledge of these two most important fluids of the body, in so far as the author shows the necessity of greater care and accuracy in determining the quantities of the essential elements of these liquids, respectively, to health; and of the changes which take place in the blood, in disease. Of the means to these ends, he suggests nothing new, but after numerous practical tests of what others have done in the same field of inquiry, he decidedly prefers Nachet's instruments for counting the globules, and believes that nothing short of actual count of the fat globules in, or chemical analysis of milk, will determine its true quality: the lactometer and cream tests commonly used, he regards as being alike fallacious. He also discusses the origin of urinary pigments, and gives an instructive plate from the work of Neubauer and Vogel. But of this, as of blood and milk, the conclusions arrived at are evidently based upon a very small amount of original research and too little study, or recognition of the researches of others. The essay, in short, scarcely arrives at the place to begin—a thorough knowledge of what others have done in the same field of inquiry—before it concludes.

The Essay is in virtue of a legacy of $10,000 to the College of Physicians and Surgeons of Philadelphia, by Benjamin Cartwright: $5,000 for the foundation of an annual course of lectures, to be known as the Cartwright Lectures, and $5,000 for an annual or biennial prize, open to the profession, for the best Essay on a Medical or Surgical subject, presented in competition to the Alumni Association of the College.

* The Cartwright Prize Essay: Observations with the Hæmacytometer upon the globular composition of the Blood and Milk. By Frederic P. Henry, M.D., Physician to the Hospital of the Protestant Episcopal Church, Philadelphia, etc. pp. 37. Philadelphia: F. A. Davis, 1881.

The Half-Yearly Report of the Medical Officer of Health for the Port of London, to 31st December, 1880, reports an unusual healthfulness for the period, the only exceptions being several outbreaks of typhoid fever on board the training ships, and a few scattered cases of small-pox. Of the former, the suggestion is made, with good reason, that it has been caused by the sewage pollution of the river. The position of one of the ships is described as being in a bight where—

"At ebb the current carries down the great volume of sewage from the metropolitan outfalls with it. This can be seen occasionally as a dark line on the water, while at all times evidences of sewage can be found in the mud on the foreshore. . . . . It seems only necessary, then, to have typhoid fever in London, and then, as a direct consequence, the germs are carried through the sewers, through the metropolitan outfalls, straight into the river, and thus naturally find their way to Purfleet"—off which the said ship lies. "If the constant outpouring of sewage continues, it will become, sooner or later, a grave question whether the Thames will any longer be a proper or safe river for stationing our training ships."

A suggestion which should be laid to heart by the authorities of New York, in the progressive sewage deposits among the shipping between the piers on both sides, and the whole length of the city.

Of small-pox, satisfaction is expressed that, notwithstanding it was rife in many parts of the city, but few cases occurred among the shipping. Of other epidemic diseases, there were none of consequence.

The total number of vessels inspected for the period was 8,740, of which—required to be cleansed and whitewashed, 319; foul cargoes, 35; number of sick sent to hospital, 60.

The Brains of Criminals* is an elaborately illustrated book, giving conclusions based upon the demonstrations of the cerebral anatomy of criminals, purporting to verify an ancient dogma, "That man thinks, feels, desires and acts according to the anatomical construction and physiological development of his brain." But the illustrations show differences in the brains of criminals only equally as great as between theirs and the brains of other persons. Among these latter, on all the evidence hitherto furnished by anatomists, there are similar differences, insomuch that, on the evidence before us, the case stands: not proven. Notwithstanding, the work is a valuable contribution to the study of cerebral anatomy, and we commend it to all students.

* Anatomical Studies from Brains of Criminals. A Contribution to Anthropology, Medicine, Jurisprudence and Psychology. By Moriz Benedikt, Professor at Vienna. Translated from the German by E. P. Fowler, M.D. 8vo., pp. 185, profusely illustrated. New York: Wm. Wood & Co.

How not to Teach; or, 100 Things the Teacher Should not Do.—With reasons why and an Appendix containing apt quotations for use in Schools. By William M. Griffin, Principal City Training School, Newark, N. J., and author of Griffin's "Number Chart," etc. New York: A. S. Barnes & Co. Is a pamphlet of thirty pages filled with useful axioms with which every teacher should be familiar.

Trance and Trancoidal States in the Lower Animals, by George M. Beard, M.D. (reprint from the *Journal of Comparative Medicine and Surgery*, April, 1881), is a paper illustrating close observation on a subject with important bearings on some hitherto inexplicable conditions of human beings, as well as the lower animals. It may be read with profit by all persons interested in psychology, and especially useful lessons may be deduced for training domestic animals. New York: W. L. Hyde & Co.

The Non-Commissioned Officers attached to the various staff departments have been very much gratified by the publication by the *Army and Navy Journal* of a very compact and handsomely-printed register, giving their stations, date of appointment, and the records of their services in the army, so far as these could be obtained. This register brings to light many facts of interest to those immediately concerned, and to all connected with our army, as showing the material of which it is composed.

The Register, which is corrected to March, was issued on the second of April, and already several hundred copies of it have been sold. It is put at the nominal price of twenty-five cents a copy to cover the cost of its issue, and is sent by mail prepaid at that price.

Missouri State Medical Association Transactions, 1880, 8vo. pp. 164, contains—besides abstract of minutes, and special reports on the progress of medicine and surgery, essays on various subjects of practice in these departments, with interesting discussions thereon—a special report on the necessity of a State Board of Health. The committee on this subject is continued with an apparent prospect of ere long securing it. The annual address of the President, G. M. B. Maughs, M.D., on *Medical Ultraisms*, reviews the progress of medicine in the State since the time of the founding of the Association in 1850, and felicitates himself and fellows on the marked improvement now everywhere manifest; and he might have added, nowhere more than in the comprehensive practical work of this session.

Diseased Meat and its Consequences upon Health and Happiness: An address delivered before the Connecticut Board of

Agriculture, from whose report it is a reprint, by Noah Cressy, M.D., V.S., Ph.D., is an interesting summary of the studies of European veterinarians on the subject, but lacking in new material.

The Sanitary News : "The Health Journal of the Mississippi Valley. . . . A monthly journal devoted to the health interests of the individual, the community, and the nation. . . . $1.00 per year. R. C. S. Reed, M.D., and C. A. L. Reed, M.D., editors and proprietors: Hamilton, Ohio." At the outset of the *News*, we contemplated, just so soon as it should have passed its first dentition without signs of feebleness or exhaustion, giving it a hearty welcome to the illimitable field of labor, elsewhere as well as in the Mississippi Valley, into which it had entered. But we regret to find, ere that trying process for younglings has had time to cleverly commence, some bad symptoms. No principle of journalism, we conceive, is better established than that which requires editors to credit selected articles to the sources whence they are obtained. The *third* number only of the *News* (for June) gives prominence to *Adulterated Coffee: How to Detect It*, word for word, from the MENU of THE SANITARIAN of two months before. It is, perhaps, charitable to conclude that such omissions on the part of editors are unintentional oversights; but only so when they are promptly corrected.

We trust our youthful contemporary will take this admonition in the kindly spirit in which it is offered; that it will not only pass the period of dentition on wholesome food, *which it is willing that all the world may know the source of*, but that it may become itself a vigorous producer, and live a thousand years, to enjoy the fruits of its own labor.

Publications Received.—Manual of Histology—Satterthwaite; Indigestion and Biliousness—Fothergill; Lectures on Digestion—Ewald; and Wilderness Cure—Marc Cook; New York: Wm. Wood & Co.—Sewer Gas and its Dangers—Brown; Chicago: Jansen, McClurg & Co.—Transactions of the College of Physicians, Philadelphia: Lindsay & Blakiston.—Smithsonian Institution, Documents Relating to its Origin and History; Smithsonian Report, 1879; Memorial of Joseph Henry—Washington: Smithsonian Institution.—Report of Commissioner of Education, 1879—Washington: Government Print.—Health Department Report of Cincinnati, 1880; Sternberg's Experimental Researches on Septicæmia; Roth on the Neglect of Physical Education and Hygiene; London: Bailliere & Co.—Wight's Myodynamics; New York: Birmingham & Co.

SANITARY APPLIANCES.

No reader of THE SANITARIAN should omit careful examination of its advertising pages. They generally keep pace with the season, and at all times represent the advancement of sanitary science in the arts.

"Fire on the Hearth," by the Open Stove Ventilating Company, of New York, we took occasion to commend several years ago, as one of the most efficient and healthful warmers hitherto invented. Various attempts at imitation by other manufacturers of warming apparatus have had the effect of stimulating the inventors of this to continued excellence, and in various styles and adaptations. The most recent combination is a 22-inch grate, fitted to ordinary mantel openings, designed for warming and ventilating large rooms, or suites of connected rooms on the same floor, or above one another. These grates are finished in the highest style of the stove-makers' art, on the same general plan as the "Fire on the Hearth," but so modified as to set into the fireplace under the mantel without any change in the brickwork or additional flues, except for *fresh air*, which is taken from out of doors, freshly warmed and distributed equably throughout the apartment. It is one of the most valuable additions to modern sanitary appliances.

Barstow's Wrought Iron Furnace we have also had occasion to commend heretofore as one of the most effectual and healthful warmers, on a large scale, with which we are acquainted. Three winters' test of one in our own house, with six hot-air flues, without any gas-leak whatever, and now in as good order as when first set, are commendable qualities. Properly set—that is to say, with an air-shaft sufficiently large, and protected from dust at its mouth by an intervening layer of loose cotton held in a wire clamp, and perfectly tight from mouth to base of furnace, and the water-box kept well supplied, the hot air, from *this* furnace at least, is as pure as the surrounding atmosphere.

Creque, Ronalds & Co., successors of Keeney, Clarke & Co., one of the oldest and best houses in New York for the manufacturing of Plumbing Materials and Sanitary Appliances, deserve the attention of all persons interested as buyers or users of such goods. Their *thoroughly tinned* copper-lined iron range boilers are worthy of the attention of all persons who comprehend the danger of exposed copper surfaces for domestic utensils. Their copper, zinc, and nickel-plated bath-tubs and fixtures, and all kinds of plumbing materials, are of the finest finish, and commend themselves to all who examine them.

Henry Huber (successor to Wm. S. Carr & Co.), manufacturer of American Defiance Valve and Cistern- and other Water Closets;

Cisterns, Urinals, Self-closing Faucets, Bath and Basin Supplies and Overflows, Monitor House and Ship Pumps, etc., etc., adapted to houses, cars, ships, and yachts, invites the attention of all dealers and persons who require the best goods of the kind in this line.

A. G. Myers—"**Myers' Sanitary Depot**"—who keeps a full assortment of enameled cast-iron soil-pipe and porcelain sanitary goods, announces a new water-closet, the "Niagara." For a description of which (with illustration) see advertisement. His "Domestic Garbage Burner" should also receive the attention of every housekeeper.

Alfred E. Jennings—"**Jennings' Sanitary Depot**," 7 Burling Slip, New York—keeps a full assortment of the justly-celebrated Jennings' Water-Closets, Sinks, Urinals, Wash-Basins, etc., of the best English make, and of the most recent English devices in sanitary mechanics. These goods should be seen to be appreciated, and no one who would have the best can afford to do without them.

Dr. Walter's Mountain Park Sanitarium, Wernersville, Pa., holds out special inducements as a winter home for invalids, no less important than for summer. Admirably situated in the midst of a region celebrated for grandeur of scenery and purity of atmosphere, and thoroughly equipped with all modern sanitary arrangements, it admits of all the facilities of climate cure of persons well enough to take out-door exercise, or for those who require rest under the most favorable conditions.

Mineral Spring Property.—Particular attention is invited to advertisement in this number, of a valuable Spring Property, in a region of country notble for its salubrity, and admirably well situated for a Sanitarium.

Electro-Massage.—Our excellent contemporary, the *Virginia Medical Monthly*, remarks on this new method of treating certain forms of chronic disease as follows:

"This mode of treatment is now engrossing the attention of the profession, and bids fair to be of inestimable value in the treatment of diseases attended by a lowered vitality. The machine for carrying out this treatment is the invention of Dr. John Butler, of New York city. A more ingenious contrivance we have rarely seen, and it is impossible to imagine an instrument that would more fully meet the requirements." And the *New York Medical Journal:*

"We regard it as an excellent contrivance." And it may be added, so easy of application as to greatly facilitate this means of treatment. Any intelligent patient or nurse can apply it—requiring direction from the physician only in regard to length of time and frequency of application.

The New York Dynamo-Electric Manufacturing Co. is at 109 E. 13th St.

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STATE MEDICINE.

An address delivered at the opening of the Section of Public Medicine, in the International Medical Association, by JOHN SIMON, C.B., F.R.S., D.C.L., LL.D.

First: a few words on what may be called the general theory of our subject-matter. The term "State Medicine" corresponds to the supposition that, in certain cases, the body-politic will concern itself with the health-interests of the people—will act, or command, or deliberate, or inquire, with a view to the cure or the prevention of disease. Before any such supposition can be effectively realized, the science of medicine—that is to say, the exact knowledge of means by which disease may be prevented or cured—must have reached a certain stage of development; and unless the science be supposed common to all persons in the State, the existence of State medicine supposes a special class of persons whom the unskilled general public can identify as presumably possessing the required knowledge. Thus, given the class of experts to supply the required exact knowledge, the body-politic undertakes that, within the limits of its own constitutional analogies, it will make the knowledge useful to the community.

I have intimated that in State medicine (just as in private medicine) the medical function may be exercised either in curing or in preventing disease; but, practically, these two departments of State medicine are not of equal magnitude, nor are dealt with in quite the same spirit.

As regards curative medicine, modern governments have in general found it needless to interfere in much detail in favor of persons who require medical treatment.

Larger and far more various than the action taken by the State with reference to the cure of disease is that which it takes in regard of prevention; and it is particularly of preventive medicine that I propose to speak. In its legal aspect it is represented by a considerable mass of statutes (nearly all of them enacted within the last thirty-five years) and by an army of administrative authorities and offi-

cers appointed to give effect to those enactments. I need not describe in detail the laws and administrative machinery to which I refer, but I may remind you of the largeness and variety of their scope, even by quoting only the terms in which I was able, twelve years ago, to speak of the public health law of England: "It would, I think, be difficult to over-estimate, in one most important point of view, the progress which, during the last few years, has been made in sanitary legislation. The principles now affirmed in our statute books are such as, if carried into full effect, would soon reduce to quite an insignificant amount our present very large proportions of preventible disease. It is the almost completely expressed intention of our law that all such states of property and all such modes of personal action or inaction as may be of danger to the public health should be brought within scope of summary procedure and prevention. Large powers have been given to local authorities, and obligation expressly imposed on them, as regards their respective districts, to suppress all kinds of nuisance, and to provide all such works and establishments as the public health primarily requires; while auxiliary powers have been given, for more or less optional exercise, in matters deemed of less than primary importance to health; as for baths and wash-houses, common lodging-houses, laborers' lodging-houses, recreation-grounds, disinfection-places, hospitals, dead-houses, burial-grounds, etc. And in the interests of health the State has not only, as above, limited the freedom of persons and property in certain common respects, it has also intervened in many special relations. It has interfered between parent and child, not only in imposing limitation on industrial uses of children, but also to the extent of requiring that children shall not be left unvaccinated. It has interfered between employer and employed, to the extent of insisting, in the interest of the latter, that certain sanitary claims shall be fulfilled in all places of industrial occupation. It has interfered between vendor and purchaser; has put restrictions on the sale and purchase of poisons; has prohibited in certain cases certain commercial supplies of water; and has made it a public offense to sell adulterated food or drink or medicine, or to offer for sale any meat unfit for human food. Its care for the treatment of disease has not been unconditionally limited to treating at the public expense such sickness as may accompany destitution; it has provided that, in any sort of epidemic emergency, organized medical assistance, not peculiarly for paupers, may be required of local authorities; and, in the same spirit, it requires that vaccination at the public cost shall be given gratuitously to every claimant. The above survey might easily be extended by referring to statutes which are only of partial, or indirect, or subordinate interest to human health; but, such as it is, it shows beyond question that the legislature regards the health of the people as an interest not less national than personal, and has intended to guard it with all practicable securities against trespasses, casualties, neglects, and frauds."* At the time when that description was written I unfortunately had to confess that the intentions of the legislature were not carried into effect;

* "Eleventh Report of the Medical Officer of the Privy Council," 1869, pp. 20, 21.

for that the then existing laws (especially in respect of the local authorities which should give effect to them) were in a state of almost chaotic confusion and unworkability; but since that time an entirely new constitution of local authorities has been made, some thousands of additional officers have been appointed, and the general fabric of the law has been consolidated, and its powers in some respects extended and made more stringent, with a view to the better prevention of disease, so far as legal powers and facilities can attain that object.

Such being the very large contribution which the body-politic makes to the purposes of State Medicine in this country, let us next see how we of the medical profession stand in respect of the scientific contribution which we distinctively owe to the same great object.

In preventive, just as in curative medicine, it occasionally happens that consequences more or less valuable result from some mere chance-hit of discovery; but except so far as this may sometimes (and but very rarely) happen, disease can only be prevented by those who have knowledge of its *causes*—knowledge which does not deserve to be called knowledge, unless in proportion as it is *conclusive and exact;* and thoroughly to investigate the causes and their mode of operation is the quite indispensable first step towards any scientific study of prevention. Essentially we know how to prevent, by having first learnt exactly how to cause. Therefore it is that preventive medicine has had almost no development until within these later times. The germinal thought of it may be traced in even the first days of our profession. The spirit in regard of which Hippocrates has been aptly called the Father of Medicine—the scientific spirit of observation and experiment, as distinguished from the spirit of priestcraft, was one which his medical writings equally showed in their preventive as in their curative relations; and when he, some twenty-three centuries ago, expounded to his contemporaries that pathology is a branch of the science of nature—that causes of disease are to be found in physical accidents of air and earth and water, and in quantities and qualities of food, and in personal habits of life, he (not without risk of being denounced for impiety) virtually proclaimed for all time the first principle of preventive medicine, and indicated to his followers a new line of departure for those who would most largely benefit mankind. His followers, however, have had their work to do. True knowledge of morbific causes could only come by very slow degrees, and as part of the development with which the physical and biological sciences have, little by little, with the labor of ages, been building themselves up; and so no wonder that, despite the lapse of time, even the most advanced of nations are hitherto but beginning to take true measure of the help which preventive medicine can render them.

Now what is the nature of that *study of causes* through which we may gradually arrive at counter-causing or prevention?

Addressing a skilled audience, I shall utter what to them is the merest commonplace when I say that, in the physical and biological sciences we acknowledge no other study of causes than that which consists in *experiment.* And the study of morbific causes is no exception to that rule: it is solely by means of experiment that we can hope so to learn the causes of disease as to become possessed of resources for preventing disease.

The experiments which give us our teaching with regard to the causes of disease are of two sorts: on the one hand we have the carefully pre-arranged and comparatively few experiments which are done by us in our pathological laboratories, and for the most part on other animals than man; on the other hand we have the experiments which accident does for us, and, above all, the incalculably large amount of crude experiment which is popularly done by man on man under our present ordinary conditions of social life, and which gives us its results for our interpretation.

When I say that experiments of those two sorts are the sources from which we learn to know the causes of disease, I of course do not mean that the mental process by which an experiment becomes instructive to us is the same in regard of the two sorts of experiment. On the contrary, the etiological problem (so long as it is a problem) is approached in the two cases from two opposite points of view; and the dynamical continuity of relation, which we call cause and effect, is traced, in the one case, from the one pole, and in the other case, from the other pole of the relation. In the one case, starting with knowledge of our own deliberately-prepared *cause*, our question is, What will be its effect? In the other case, starting from a certain *effect* presented to us, our question is, What has been its cause? But in the second case, just as in the first, when the question is answered, when the problem is solved, when the relation of cause and effect has been made clear, we recognize that the conjuring-power which has brought us our new knowledge is the power of a *performed experiment.*

Let me illustrate my argument by showing you the two processes at work in identical provinces of subject-matter.—What are the classical experiments to which we habitually refer when we think of guarding against the dangers of Asiatic cholera? On the one side there are the well-known *scientific* infection-experiments of Prof. Thiersch, and others following him, performed on a certain number of mice. On the other hand there are the equally well-known *popular* experiments which, during our two cholera epidemics of 1848–9 and 1853-4, were performed on half a million of human beings, dwelling in the southern districts of London, by certain commercial companies which supplied those districts with water. Both the professor and the companies gave us valuable experimental teaching as to the manner in which cholera is spread. I need not state at length the facts of those experiments, probably known to all here, but may rather justify my parallel by referring to an etiological question which will presently be discussed in our section.

It concerns the *causation of tubercle*—the most fatal by far of all the diseases to which the population of this country is subject. On that subject, for the last sixteen years, we have had a new era of knowledge. It was the great merit of a Frenchman, M. Villemin, that he, in 1865, first made us fully aware that tubercle is an infectious disease. He did this by certain *laboratory experiments* performed on other animals than man. He found that general and fatal tubercular infection of the animal was produced when he inoculated it subcutaneously with a little crude tubercular matter from the human subject. That first laboratory investigation of the subject has been fol-

lowed most extensively by others; and the further experiments, while entirely confirming M. Villemin's discovery, have shown that subcutaneous inoculation is not the only mode by which the tubercular infection can be propagated. Dr. Tappeiner and others have shown that the same effect is produced on the animal if tubercular matter, (such as the sputa of phthisical patients) be diffused in spray in the air which the animal breathes; and Prof. Gerlach of Hanover showed twelve years ago, with regard to the bovine variety of tubercular disease (the perlsucht of the Germans), that its infection can be freely introduced through the stomach if bits of tubercular organs be given in the food, or if the healthy animal be fed with milk from the animal which has tubercle. That the communicability of tubercle from animal to animal is also being tested to an immense extent by *popular experiments* on the human subject, is what a moment's reflection will tell; and from that wide field of experiment I select one instance for illustration. I have every reason to believe that Prof. Gerlach's experiments on the communicability of tubercle by means of milk are very extensively parodied by commercial experiments on the human subject. I learn, on what I believe to be the highest authority in this country, that tubercle (in different degrees) is a malady which abounds among our cows; and that so long as the cow continues to give milk, no particular scruple seems to prevent a distribution of that milk for popular use. To the persons who consume that milk an important question as to the causability of tubercle is put in an experimental form. Whether they will become infected with tubercle is a question which the individual consumers do not stand forward to answer for themselves like the animals of the laboratory experiments; but Dr. Creighton's lately published book, entitled, "Bovine Tuberculosis in Man," and a paper in which I am glad to say he brings under notice of our section the very remarkable series of facts on which he grounds that startling title seem to suggest a first instalment of answer in accordance with Prof. Gerlach's experimental finding.

The two sorts of experiment—the scientific and the popular—differ, as I have noted, in this particular: that the popular experiment is almost always done on man; the scientific almost always on some other animal. It is true that many memorable cases are on record, where members of our profession have deliberately given up their own persons to be experimented on by themselves or others for the better settlement of some question as to a process of disease; have deliberately tried, for instance, whether, in this way or in that, they could infect themselves with the poison of plague or of cholera; and as regards one such case which is in my mind, I think it not unlikely that the illustrious life of John Hunter was shortened by the experiments which he did on himself with the ignoble poison of syphilis. There have been cases, too, where criminals have been allowed to purchase exemption from capital or other punishment at the cost of allowing some painful or dangerous experiment to be performed on themselves. And cases are not absolutely unknown where unconsenting human beings have been subjected to that sort of experiment. But waiving such exceptions, the rule is, as I have said, that scientific experiments relating to causes of disease are performed on

some animal which common opinion estimates as of lower importance than man. Now, as between man and brute, I would not wish to draw any distinction which persons outside this room might find invidious; but, assuming for the moment that man and brute are of exactly equal value, I would submit that, when the life of either man or brute is to be made merely instrumental to the establishment of a scientific truth, the use of the life should be economical. Let me, in that point of view, invite you to compare, or rather to contrast with one another, those two sorts of experiment from which we have to get our knowledge of the causes of disease. The commercial experiments which illustrated the dangerousness of sewage-polluted water-supplies cost many thousands of human lives; the scientific experiments which with infinitely more exactitude justified a presumption of dangerousness, cost the lives of a few dozen mice. So, again, with experiments as to the causation of tubercle:—judging from the information which I quoted to you, I should suppose that the human beings whose milk-supply on any given day includes milk from tubercular cows, might be counted, in this country, in tens of thousands; but the scientific experiments which justify us in declaring such milk-supply to be highly dangerous to those who receive it were conclusive when they amounted to half-a-dozen. So far, then, as regards the mere getting of experimental knowledge, we must not, with a view to economy of life, be referred to popular, rather than scientific experiment. And in the same point of view, it perhaps also deserves consideration that the popular experiments, though done on so large a scale, very often have in them sources of ambiguity which lessen their usefulness for teaching.

Let me now briefly refer to the fact that, during the last quarter of a century, all practical medicine (curative as well as preventive) has been undergoing a process of transfiguration under the influence of laboratory experiments on living things. The progress which has been made from conditions of vagueness to conditions of exactitude has, in many respects, been greater in these twenty-five years than in the twenty-five centuries which preceded them; and with this increase of insight, due almost entirely to scientific experiment, the practical resources of our art, for present and future good to the world, have had, or will have, commensurate increase. Especially in those parts of pathology which make the foundation of preventive medicine, scientific experiment in these years has been opening larger and larger vistas of hope; and more and more clearly, as year succeeds year, we see that the time in which we are is fuller of practical promise than any of the ages which have preceded it. Of course, I cannot illustrate this at length, but some little attempt at illustration I would fain make. First, let us glance at our map. When we generalize very broadly the various causes of death (so far as hitherto intelligible to us) we see them as under two great heads, respectively autopathic and exopathic. On the one hand, there is the original and inherited condition under which to every man born there is normally assigned eventual old age and death, so that, sooner or later, he "runs down" like the wound-up watch with its ended chain; and, as morbidities under this type, there are those various original

peculiarities of constitution which make certain individual tenures of life shorter than the average, and kill by way of premature old age of the entire body, or (more generally) by quasi-senile failure of particular organs. On the other hand, as a second great mass of death-causing influence, we see the various interferences which come from outside; acts of mechanical violence, for instance, and all the many varieties of external morbific influence which can prevent the individual life from completing its normal course. As regards cases of the first class—cases where the original conditions of life and development are such as to involve premature death (which in any such case will commonly show itself as a fault in particular lines of hereditary succession)—the problem for preventive medicine to solve is, by what cross-breeding or other treatment we may convert a short-lived and morbid into a long-lived and healthy stock; and this, at least as regards the human race, has, I regret to say, hardly yet become a practical question. But, as regards cases of the second class, evidently the various extrinsic interferences which shorten life have to be avoided or resisted, each according to its kind; and here it is that the scientific experimenters of late years have been giving us almost daily increments of knowledge.

Two early instances, vastly important in themselves, though of a comparatively crude kind, I have already mentioned; and I now wish to glance at some illustrations of the immense scope and the marvelous exactitude of the newer work.

The invaluable studies of M. Pasteur, beginning in the facts of fermentation and putrefaction, and thence extending to the facts of infectious disease in the animal body, where M. Chauveau's demonstration of the particulate nature of certain contagia came to assist them —they, I say, partly in themselves, and partly in respect of kindred labors which they have excited others to undertake, have introduced us to a new world of strange knowledge. We have learnt, as regards those diseases of the animal body which are due to various kinds of external cause, that probably all the most largely fatal of them (impossible yet to say how many), represent but one single kind of cause, and respectively depend on invasions of the animal body by some rapidly self-multiplying form of alien life. This doctrine, which scientific experiment initiated, has, for the last dozen years, been extending and confirming itself by further experiment. As soon as the doctrine began to seem probable, science saw that, should it prove true, it must have the most important corollaries. If the cause of an infecting human disease is a self-multiplying germ from the outside world, the habits of that living enemy of ours can be studied in its outside relations. It becomes an object of common natural history, it has biological affinities and analogies. We can cultivate it in test-tubes in our laboratories, as the gardener would cultivate a rose or an apple, and we can see what agrees and what disagrees with its life. And then, as the next and immeasurably most important stage, where nothing but experiment on the living body will help us, we can try whether perhaps any of our modifications of its life have made it of weaker power in relation to the living bodies which it invades, or whether, through our more intimate knowledge of its vital affinities, we can artificially give to bodies which it would invade, a partial or

complete protection against it. Such, at first blush, were the obvious possibilities of research which the new doctrine of infectious disease suggested to the mind of the pathologist; and never since the profession of medicine has existed, had a field of such promise been before it. The promise has not been belied. A host of diseases has been worked at in such lines as I just now indicated, and with many of them important progress has been made.

It would be impossible for me even to name a twentieth part of the investigations which have been more or less successful. As regards some which have most struck me, I pass with but a word Dr. Klein's investigation of the pneumo-enteritis of swine; Prof. Cohn's and Dr. Koch's and Dr. Buchner's respective contributions to the natural history of the anthrax bacillus; Dr. Bollinger's recognition of the microphytic origin of an important cancroid disease of horned cattle, with Dr. Johne's illustration of the inoculability of this disease; the research by Drs. Klebs and Tommasi-Crudeli into the intimate cause of marsh-malaria; and, not least, the demonstration (as it appears to be) which Dr. Grawitz has recently published, that some of the commonest and most innocent of our domestic microphytes can be changed by artificial culture into agents of deadly infectiveness. I pass these and others, in order that I may more particularly speak of some which have already shown themselves practically useful; for in respect of some of them the time has already come when abstract scientific knowledge is passing into preventive and curative knowledge.

First, and not in a spirit of national partiality, I will mention the application which M. Pasteur's doctrine has received at the hands of Mr. Lister, with regard to the antiseptic treatment of wounds: an application which, enforced and illustrated at every turn by Mr. Lister's own eminent skill as an experimentalist, has been confirmation as well as application of the parent doctrine; and the beneficent uses of which, in giving comparative safety to the most formidable surgical operations, and in immensely facilitating recovery from the most dangerous forms of local injury, are recognized—I think I may say, by the grateful common consent of our profession in all countries, to be among the highest triumphs of preventive medicine.

Secondly, out of the experimental studies of anthrax—chiefly out of those of Dr. Sanderson and Mr. Duguid in this country, and those of Dr. Buchner in Germany and M. Toussaint in France, has grown a knowledge of various ways in which the contagion of that dreadful disease can be so mitigated that an animal inoculated with it, instead of incurring almost certain death, shall have no serious illness; and the further knowledge has been gained that the animal submitted to that artificial procedure is thereby more or less secured against subsequent liability to the disease. In other words, with regard to that disease, an infliction which sometimes spreads to man from his domestic animals, and one which in some parts of Europe is of serious consequence to agricultural interests, as well as to animal life, the later experimenters—of whom I may particularly name M. Toussaint and our countryman, Prof. Greenfield—seem to be giving to the animal kingdom, and to the farmers, the same sort of boon as that which Jenner gave to mankind when he taught men the use of vaccination. Quite recently, our great leader, M. Pasteur, seems to have made, by new experiments, still further progress in the mitigation of anthrax.

Thirdly, a similar discovery has been made by M. Pasteur, with reference to the contagium of a very fatal poultry disease, known by the name of fowl's cholera; he has learned to mitigate that contagium to a degree, in which, if fowls be inoculated with it, they will suffer no serious ailment; and he has found that fowls so inoculated (or, as he, in honor of Jenner, would say, "fowls so vaccinated") are proof against future attacks of the disease.

Fourthly, Prof. Semmer, of Dorpat, through experiments done under his direction by Dr. Krajewski, has made a similar discovery in regard of the infection of septicæmia; has found, namely, that by treatment like that with which M. Toussaint mitigates the contagium of splenic fever, he can bring the most virulent septic contagium into a state in which it shall be mild enough to serve for harmless inoculations; which inoculations, when performed, shall be protective against future infections.

Finally, in a different direction of experimental work, let me name the recent and most admirable research which Dr. Schüller, of Greifswald, has made, nominally in respect of certain surgical affections of joints, but in reality extending to the inmost pathology and therapeutics of all tubercular and scrofulous affections. A knowledge of the fatal infectiveness of crude tubercular matter had been given (as I before said) by Villemin and those who followed him; and Prof. Klebs, four years ago, declared the infective quality to be due to the presence of a microphyte (micrococcus), which he had succeeded in separating from the rest of the matter by successive acts of cultivation in fluids of inorganic origin. Dr. Schüller solidly settles and widely extends that teaching. According to his apparently quite unquestionable observations and experiments, the micrococcus which characterizes tubercle, characterizes also certain affections popularly called "scrofulous"—namely, "scrofulous" synovial membrane, "scrofulous" lymph-glands, and lupus: so that these diseases may be defined as essentially tubercular, and that inoculation with matter from any of them, or with a cultivation fluid in which the micrococcus from any of them has been cultivated, will infect with general tuberculosis. The rapid multiplication of the tubercle micrococcus in the blood and tissues of any inoculated animal can be verified both by microscopical observation, and by inoculative experiment; and an extremely interesting part of the research, in explanation of certain of our human joint-diseases, is the demonstration that if in the inoculated animal a joint is experimentally injured, that joint at once becomes a place of preferential resort to the micrococcus which is multiplying in the blood, and becomes consequently a special or exclusive seat of characteristic tubercular changes. Even thus far the practical interest of Dr. Schüller's book is such as it would not be easy to overstate, but still greater interest attaches to the last chapter of the book, in which, confidently resting on the pathological facts which I have quoted, he makes proposals for the treatment of tubercle on the basis of its microphytic origin, and shows the successful result of such treatment as he has hitherto tried, from that basis, on animals artificially infected by him.

I venture to say that in the records of human industry it would be impossible to point to work of more promise to the world than these

various contributions to the knowledge of disease, and of its cure and prevention; and they are contributions which from the nature of the case have come, and could only have come, from the performance of experiments on living animals.

At this most productive epoch in the growth of medical science, our English studies have been interrupted. An Act of Parliament, passed five years ago under the title of the Cruelty to Animals Act, has made it difficult or impossible for scientific observers any longer to follow in this country any such courses of experiment as those which of late years, at the cost of relatively insignificant quantities of brute suffering, have tended to create an infinity of new resources of relief for the sufferings both of brute and man. The Act does not in express terms interdict all performance of such courses of experiment: it nominally allows them to be done under a variety of limited licenses which may be granted by a Principal Secretary of State; but the limitations under which these licenses are granted, and the trouble, delay, and friction which necessarily to some extent, and, in fact, often to an intolerable extent, attend the obtaining of any one of them, are practically little better than prohibition.

The Act apparently contemplates, as the chief subjects of its operation, an imaginary class of unqualified persons, who, with no legitimate relation to scientific research, would, under pretense of such research, torture, and (it is supposed) take pleasure in torturing, live animals; and against this devilish class of persons the Act is very indulgently framed: for, instead of expressly refusing license to unqualified persons, and perhaps hinting to such of them as would do willful cruelty under pretence of study that the lash and treadmill are for such scoundrels—instead of this, I say, the Act virtually confounds together that imaginary class of unqualified and cruel persons, and, on the other hand, our professional class of *bonâ fide* scientific investigators, on whom the progress of medicine depends, and whose names are sufficient security for their conduct. What is counted good for the one class is also counted good for the other. The law will trust no licensed experimenter farther than it can provide for his being minutely watched and regulated by the Secretary of State: and in respect of the details of experimental procedure, the supervision of that high political officer is substituted for the discretion and conscience of the scientific investigator.

Consider for a moment what this means in regard of the members of our profession whom it affects. Contrast with it the almost unbounded trust with which the world, from time immemorial, has regarded the character of our profession. Consider the relation of inmost confidence in which members of our profession in every corner of the kingdom are admitted to share in the sanctities and tendernessess of domestic life. Consider our immense daily responsibilities of human life and death. Consider that there is not a member of our profession to whom the law does not allow discrètion that, in certain difficulties of childbirth, he shall judge whether he will kill the child to save the mother. And in contrast with all this, is it to be seriously maintained that society cannot trust us with dogs and cats? that our foremost workers—(for it is essentially they who are affected)—cannot be trusted to behave honestly towards their brute

fellow-creatures, unless they be regulated and inspected under a special law in much the same prevenient spirit as if they were prostitutes under the Contagious Diseases Act?

I have reason to believe that, if that Act continues on the statute-book, one of two results will follow. Experiments, indispensably necessary for the growth of medical science in relation to the cure and prevention of disease, will cease, or almost cease, to be done in this country; or, as the alternative to this, persons who desire to advance the science of their profession, will be tempted to clandestinely ignore the law and to run their chance, if the worst comes to the worst, of having to try conclusions with the common informer.

Let me illustrate this by two personal references: I have already mentioned Prof. Lister as an experimenter, whose name is now classical wherever science has reached, and whose work has been of signal advantage to mankind. Last autumn Mr. Lister wished to do some experiments in extension of the particular branch of knowledge with which his name is identified, and at a point which he considered of extreme importance in surgical pathology. He found he must either abandon his investigation or must conduct it in a foreign country, and in his zeal for science he chose the latter course. His experiments (which had to be on large animals) were done at the Veterinary College of Tolouse; and in stating this fact in a letter, from which I quote, Mr. Lister added that "even with reference to small animals, the working of the Act is so vexatious as to be practically prohibitory of experiments by a private practitioner like myself, unless he chooses to incur the risk of transgressing the law." A second name which I have mentioned is that of Prof. Greenfield, who has so highly distinguished himself in developing, by means of experiments, the preventive medicine of splenic fever. Dr. Greenfield, in order to perform his inoculation experiments, had of course to become a license-holder under the Act; and his experience of the hindrances which attach to that position is expressed to me in the following terms: "It is my deliberate conviction, as a result of my experience, that these hindrances and obstacles are so numerous and so great as to constitute a most serious bar to the investigation of disease, and even of such remedial measures as would by common consent be for the direct benefit of the animals experimented upon. When to this is added all the annoyance and opprobrium which are the lot of investigators, it is to be wondered at that any one should submit to be licensed." Dr. Greenfield's experimental operations consisted only in inoculating the virus of animal diseases, and he says: "I have not been engaged in other investigations for the simple reason that, with the present restrictions and the difficulty in obtaining a license, I regard it as almost hopeless to attempt any useful work of the kind in this country."

As I feel sure that the Act must at no distant time be reconsidered by the Legislature, and as I also very strongly feel that, quite apart from any question of legal enactments, there is the question of moral right or wrong to be considered in the matter, I would beg you to allow me to make my own public confession of faith (from which I dare say yours will not much differ) in that extremely important matter of controversy.

The question being whether medical science can rightly use living animals as subjects for experiments which may be painful, and even, in exceptional cases, very painful to them, the answer may be sought in either of two directions: 1. What says the voice of the experimenter's own conscience? and 2. What says the standard of common contemporary conduct in analogous cases?

As regards the first, if I may take the liberty of expressing my own feeling, I would say this. I do not in any degree regard it as matter of indifference that, in certain cases, by my own hand or by that of some one acting for me, I must inflict death or pain on any living thing. I, on the contrary, think of it with true compunction; but I think of it as good or bad according to the end which it subserves. Where I see my way to acquire, at that painful cost, the kind of exact knowledge which, either in itself or in contribution to our common stock, will promote the cure or prevention of disease in the race to which the animal belongs, or in the animal kingdom generally, or (above all) in the race of man, I no more flinch from what then seems to me a professional duty, though a painful one, than I would, in the days before chloroform, have shrunk from the cries of a child whom I had to cut for stone. If, in a case of the latter sort, the surgeon nerves himself to his work by the conviction of an indispensable usefulness in what he has to do, so does the pathologist in his, and surely in a much larger sense. The agitated parent of the child might sometimes be tempted to say: "Forbear giving this cruel pain; let the poor little sufferer die"; but the surgeon's reply would have comforted her. And so with the physiological experimenter: except that he, instead of looking at one individual life to be saved, is looking at a race or at many races, and reflects how, in respect of some grievous physical misery, the whole of them, in all their multitudinous successions, may be redeemed through the suffering of the few. This is my personal view of the abstract right or wrong in the question. I state it because, in matters of right and wrong, no man ought to shelter himself behind authority. I believe I may add that if it, or something very like it, had not for centuries been the general view of the medical profession, our professional knowledge would probably be standing in this present age about where it stood in the days of the Plantaganets. Of Harvey and Hunter and Bele, we well know that such was the view on which they acted in rendering their immortal services to mankind; and I am not aware that any man, whose opinion really counts in matters of medical science, would express any material dissent from it.

The second standard to which I referred was that of the common conduct of men in *analogous* cases. I pointedly say "analogous," rather than "similar," because common life does not in fact give cases which, properly speaking, are "similar," to ours. But what, I ask, is the common *principle* of behavior of civilized man towards the so-called lower animals? He in every respect subordinates their lives to his own. If he thinks he can get an advantage to himself by killing or painfully mutilating an animal, he does so with apparently no hesitation. See, for one instance, the sexual mutilations which are inflicted on all but a small minority of most kinds of domestic animals, and, as regards some kinds, on many of the females. When

I appeared as a witness six years ago before the Royal Commission which was considering the question of our experiments, I particularly endeavored to draw their attention to this view of the case ; and in one of my answers (No. 1491) I entered on it more fully than would be suitable to the present occasion.

Thus, either way, whether I look to what I may call the general conscience of the medical profession, or look to the principles by which men in general govern their conduct towards the brute creation, nowhere do I see fair ground on which exception from outside can be taken to a limited, a strictly economical, use of animal life for purposes of scientific experiment.

No doubt there can be found, outside the medical profession, excellent persons, and plenty of them, whose first inclination would be to dissent from that position of ours ; and some such persons have (as I think, hastily) given public utterance to such first impressions, and done their best to promote legislation against us. Among names which I see identified with opinions different from ours, are some for which I have deep respect Particularly of one such man, whom I have the honor to know, I think it may be truly said that his own whole life has been one of practical beneficence, and I would not willingly incur the censure of any such man. But even to him I would fearlessly say, that I think he has not done justice to the case of our profession. To him, and such as him, I would confidently appeal to reconsider their first impressions. On him, and such as him, I would urge that the practice of scientific experimentation on living animals is but an infinitesimally small application of the license which common life claims for itself in regard of animals ; and I would challenge such men to examine with strict impartiality what are their own responsibilities, direct and indirect, in regard of the infliction of pain on living animals.

I protest against any man's applying to this extremely important question a purely arbitrary standard of right or wrong. Those who pronounce judgment on their neighbors must be prepared to state the principle on which they judge. "Compound for sins you are inclined to, by damning those you have no mind to," is the Pharisee's easy-going formula. Where would life be if that were generally accepted? Suppose a *genus* of action ; let men draw an arbitrary line across it—a line prescribed by no better rule than that which governed the lady's dislike to Dr. Fell ; let them affix a nickname of praise to all on one side of the line, and a nickname of dispraise to all on the other : truly we should thus have the readiest of royal roads to unlimited mutual persecution.

And I protest against a standard of right and wrong being fixed for us on grounds which are merely sentimental. In certain circles of society, at the present time, æsthetics count for all and all ; and an emotion against what they are pleased to call "vivisection" answers their purpose of the moment as well as any other little emotion. With such sections of society, our profession cannot seriously argue. We have to think of usefulness to man. And to us, according to our standard of right and wrong, perhaps those lackadaisical æsthetics may seem but a feeble form of sensuailty.

Of the mere screamers and agitation-mongers who, happy in their

hysterics or their hire, go about day by day calumniating our profession and trying to stir up against it the prejudice and passions of the ignorant, I have only to express my contempt.

I regret to have had to speak at so much length of the heavy cloud which at present hangs over the study of scientific medicine in England, and which, in my opinion, is likely to be of specially disastrous effect on the progress of preventive medicine. As a very old public servant in that cause, I should indeed grieve to see it brought to a stand-still for want of the scientific nurture which, in truth, is its very basis of life; and, speaking publicly of the danger on this occasion, I have hoped that the occasion may give importance to what I say.

And now, gentlemen, from contemplating that cloud, which happily is but local, and which perhaps may be but temporary, I gladly turn to skies which have no cloud. If there exist in the social organism any function whatsoever for which development and eventual triumph may be foretold, surely it is that of State Medicine. Of the two great factors concerned in it—the two strong powers which within our own time have converged to make it the reality which it is—the growth of science on the one hand, and the growing stress of common humanity on the other, neither one is likely to fail. Of our science it is needless to say that it will grow. To the science of nature indeed is allotted that one incomparable human day which knows no sunset. In the pure light of its ever-present daybreak, individual workers will pass away, generations will change, but the studies of Nature, and, above all, the gathering of such knowledge as can lessen man's physical difficulties and sufferings, will surely grow from age to age, and, as on Proserpina's sacred tree, one golden fruit will follow another: "simili frondescet virga metallo." And no less also in the other direction, the auguries are wholly for our cause. Popular education is gradually making its way, and it will grow to be a force on our side. Masses of mankind that now have to be humbly pleaded for by others, will then be strong to speak for themselves. Physical interests, now but little understood, will then be within grasp of all men's apprehension. Not only will health be recognized at its true value, and its elementary requirements be regarded, but also the frauds and villainies which are now committed against it will have become intelligible to the common mind; and the workman of the future will strike against being cheated in health as he would now strike against being cheated in wages. As such times come to the world, the science and the profession which care for man as man will get to be better appreciated than now. And in proportion as an educated people grows to become Body-Politic, State Medicine will be seen to represent the true ideal of Government-action which sets its standard of success in the "greatest happiness of the greatest number."

THE PROGRESS OF SANITARY PROTECTION AT NEWPORT, R. I.

IV.—Filth Diseases, Sewage Ice, the Insignificance of an "Advisory Board of Health," and the Importance of Intelligent Sanitary Supervision.

By Dr. Horatio R. Storer.

(*Continued from p.* 441.)

. . . At the meeting of the Association, Sept. 10, 1879, the Mayor, Mr. J. Truman Burdick, and the Aldermen of the city were present, by invitation. They were welcomed by the President, Mr. Powel, who explained the objects of the Association—a main feature of which was to assist, rather than interfere with, the City Government in its efforts towards protecting and improving the public health, and requested them, in behalf of the Council, to rely upon its cordial co-operation in the future.

The Rev. Dr. Child and Mr. Coggeshall followed Mr. Powel in remarks of similar import; Dr. Child particularly dwelling upon a case of diphtheria at that time existing on the Point, where the subject of it had been in the habit of riding upon a swill-wagon. He asked Dr. Engs, as chairman of the Advisory Board of Health, whether he was cognizant with the facts in this case? Dr. Engs replied that he was, and that the surroundings of the house in question, though very bad, were, probably, not exceptional to the rule of the neighborhood.

Alderman Brown expressed regret that the Council had not been represented at the recent hearing before the Committee on Streets and Highways, concerning the question of a sewer for the Barclay Cottage, the necessity for which had been communicated by the Council to the City Government; and added, that the question of suing the Council for damages had been seriously thought of by the owner of the estate. In his opinion, the legal counsel for the latter had hoped to commit the City Government to an unfavorable opinion of the action of the Sanitary Association.

The President replied to the closing portion of Mr. Brown's remarks, and showed that, by the charter of the Association, it was empowered to take just such action as it had done in the present instance for the protection of its members; and as it had confined itself strictly to its specific duties, and within its privileges, it was, therefore, not liable to legal annoyance. There could be no higher duty for a citizen than protecting his fellows from unnecessary disease and death.

Dr. Storer explained to Alderman Brown why it was that no member of the Council had attended the meeting referred to by him. The duty of the Association had been fulfilled in communicating to the City Government the unfavorable report upon the house in question, that had been made to the Council by its Inspecting Engineer. It was his own personal anticipation that eventually all agents for leasing real estate in this city would find it necessary to exhibit evi-

dence that premises were in good sanitary condition before they could obtain tenants for the same.

Mr. Coggeshall desired to take advantage of the presence of so many representatives of the City Government, to ascertain their reasons for not hitherto concluding arrangements for the use of the Easton's Pond water for public purposes?

Mr. Brown stated that his own feeling was that Mr. Norman's terms for hydrants, etc., were unfavorable, and cited comparative evidence upon this point from other cities; allowing, however, that in many instances such estimates were intentionally falsified for the purpose of quieting taxpayers, and were, therefore, unreliable.

Mr. Coggeshall inquired if one or more street hydrants and faucets in public buildings had not already been leased to the city by Mr. Norman?

Mr. Brown replied that such was the case.

Mayor Burdick was not inclined to believe that hydrants were required in this city for fire purposes, and he regretted that the arrangement referred to had been made. He thought that it would be better for the interests of the city to become the sole owner of the property, and trusted that the years of grace still remaining in which to do so, would be availed of.

President Powel did not consider it wise for a city government to saddle itself with such a burden, provided the care of water-works could be kept in the hands of reliable and honorable parties like Mr. Norman. He had formerly questioned the advisability of obtaining the city water from the source which had been availed of, but now that a system of sewerage had been decided to be necessary, there would be required a constant and abundant supply of water to flush the sewers, as he supposed had been explained to the City Committee by the engineer who was to furnish the plans of sewerage.

Mr. Brown responded, that the gentleman referred to, Mr. Chesborough, had said not a word to them upon this point, perhaps because the day of his visit had been a rainy one, and water, therefore, present in more than abundance.

Dr. Storer referred to the necessity of a public supply of water for other purposes than those that had been indicated—public urinals were required, and it had been stated to him by the Chief of Police, that it was from the absence of these that the lower portion of the park on Washington Square, being situated directly opposite to the exit from the opera house, was found so difficult to be kept in a reputable condition.

Dr. Storer called the attention of the Aldermen to the importance of their intimating to the Advisory Board of Health that they had lately appointed, their desire to receive from them their spontaneous advice upon any health questions that might exist. He spoke of the matter from having learned from Drs. Engs and Rankin that they had not been consulted in the matter of the basin nuisance in the neighborhood of the R. R. station, that had lately been remedied. It was not well that those gentlemen should have to wait for a formal request for their opinions. He particularly pointed out the necessity for a revision of the city ordinances that should be an actual one —there being room for the expunging of certain antiquated sections in the city code, and for the addition of others of practical value.

The interest and practical character of the points raised for discussion were sustained throughout the meeting, and it was adjourned after expressions from the Council, and its guests, of mutual good will.

At the meeting of Oct. 8, a report was received from the Inspecting Engineer, detailing the examination he had made of the premises of a member of the Association. Serious breaks of the drains, from frost, had been found, sufficient to account for the case of typhoid fever which had occurred in the house.

There had been no foul odor observed previous to the examination, and during it the inspector could detect none.

Dr. Storer remarked that he had called the inspector's attention to the very great importance of this fact. It is now admitted by the best sanitary authorities that the most dangerous instances of drain poisoning may be unaccompanied by sufficiently marked or offensive odor to excite suspicion that anything is wrong.

Dr. Storer read a letter from Dr. E. S. F. Arnold, requesting the Council to consider the matter of the illy drained district lying at the foot of the bay, between Wellington Avenue and the King farm. Dr. Storer stated that in his reply to Dr. Arnold, he had represented that it would facilitate the action desired by that gentleman, were he to become a member of the Association.

Dr. Rankin remarked that, in addition to the conditions described by Dr. Arnold, as dependent upon faulty drainage of the land, there existed the great danger consequent upon the fact that a sewer emptied into the marsh.

Mayor Burdick corroborated all that had been said upon the subject, and added that the quarter in question was one of those portions of the city in which diphtheria had lately appeared. It would undoubtedly be necessary to thoroughly drain the marsh.

At the meeting of Dec. 11th, Mr. Coggeshall spoke of the revised city ordinances which, during the past week, had been accepted by the City Council. They were not perfect, but a very great step had been taken in the right direction, and this was largely due, so he had been informed, to the conversation held between the Mayor and members of the Aldermanic Board and the Council of the Association, at a recent meeting of the latter.

Mr. Coggeshall expressed great satisfaction that the Association had been instrumental in bringing about so much that was good, and he felt that even should nothing further be accomplished, it had cause for pride and gratification.

Jan. 13th, 1880, a vote was passed that the Council earnestly suggest to the Advisory Board of Health, in view of the outbreak of a filth disease (scarlet fever) that has lately occurred on one of the most carefully looked after premises in the city, the importance of urging upon the City Council the appointment of a skilled and competent Sanitary Inspector, whose duty shall be to systematically examine the condition of all cesspools, etc., and their position relative to the nearest wells.

At the meeting of March 9th, the existence of scarlet fever in the city, and the means by which it may be spread, were discussed ; and the Council expressed their appreciation of the prompt and energetic

measure (notices of warning attached to the infected houses) employed by Mayor Burdick at the suggestion of the Advisory Board of Health, to confine the disease to the premises upon which it existed.

At the meeeting of May 11th, Dr. Storer called attention to the existence of small-pox in the neighboring city of Fall River. He thought that this was the time for the Council to take measures which might tend to cause the City Council to appoint a permanent Board of Health. He had prepared the draft of a communication to the City Council to that effect, which he read. It was voted that the paper offered by Dr. Storer be accepted by the Council, and that it be signed by the President, Vice-President, and Secretary of the Association, and presented at the first meeting of the incoming City Government.

In course of conversation, Mr. Burdick mentioned several deaths which had lately occurred from what he considered preventable diseases. In each case of reported contagious disease he had communicated with the Superintendent of Schools, that he might take measures to prevent the spreading of contagion by the children.

June 8th, the probability of the appointment of a permanent Board of Health by the present City Council was discussed. Mr. Burdick was not very sanguine of their doing so, and Dr. Storer, in the hope that the necessity of such action being brought constantly to their notice would have its effect, offered the provisional motion, "that in case the City Council in session this evening do not take any action towards appointing a permanent Board of Health, the Secretary be directed to call to the mind of that honorable body the importance of taking some means to purify the basin north of the railroad, which is at present in a very foul and dangerous condition, owing to the fact that there is insufficient ebb and flow of tide water, and it being not only the dumping ground for all kinds of refuse matter, but the receptacle of several private and public sewers." The motion was seconded and passed.

July 27th, the Secretary presented his annual report; in part, as follows :

The inhabitants of Newport, owing to the situation of their city, have always enjoyed remarkably good health, and the fact that this has been the case is looked upon by them with pride and satisfaction, and they have been unwilling to open their eyes to the present or to look forward to the future. It is sufficient that the pure air of heaven has, in the past, brought health and longevity to them, and it is taken as a matter of course that such will be the case for all time to come.

. . . There was a time when wells dug down into the solid rock furnished pure spring water. By an occasional cleaning of the well, one generation after another could go on using this water without a doubt of its purity. But estates have been divided and sub-divided, other wells have been sunk, and new cesspits dug, the latter, perhaps, on account of the narrow limits of the place, close to the well of some old homestead. Soon the soil becomes impregnated by the liquid filth, and, naturally, the water of the wells in the neighborhood is infected. This has continued until it is the exception where the water of a well is found fit for domestic purposes.

. . . Thus matters stood in the fall of 1878, when the Sanitary Protection Association was organized for the purpose of mutual insurance, an organization of citizens acting in self-defense. But, by its constitution, it has no political interests whatever, and was organized strictly for the preservation of private and public health.

. . . The Association has been slow in its growth, but, upon considering the disfavor with which it was received by the people of our city in the early portion of its existence, we have cause for congratulation that it is steadily increasing its good work, and gaining ground in the estimation of the public.

. . . Owing to the advantageous arrangement which this Association, as a corporate body, is enabled to make for the examination of water, many members have obtained an analysis, and, of the well waters examined, only one sample has been good water. Of the city water, two analyses have been made, one showing the water to be good, and the other, made during a season of continued drought, the water of the pond being low, and the sample unfiltered, resulting not so favorably.

. . . At the outset the expenses of the Association required an entrance fee of six and ten dollars. This has been reduced to three dollars to permanent residents of Newport and five dollars to those who occupy their dwelling during a portion of the year only, "this difference being based upon the fact that premises continuously occupied are more likely to be kept in good order and therefore to require less rigid and expensive examination."

No one need hesitate, therefore, on account of the expense, to subscribe to the Association. Let each householder obtain a yearly report as to the condition of his premises; if defects are found it would naturally be his wish to repair them, and if none exist he will feel contented in the assurance that there is nothing more he can do to preserve the life and health of his family.

At this meeting it was announced that the sum of one hundred dollars had been generously placed at the disposal of the Association by one of its members, Mr. George H. Norman, for the purpose of awarding prizes to the owners of dwellings, who shall, for the space of one year, keep their premises in the most perfect order and sanitary condition. A committee was appointed to take this matter in hand and give it practical shape and direction.

The following unsolicited editorial notice appeared in the *Newport Daily News* of July 29, 1880:

"The Sanitary Protection Society held its annual meeting yesterday. No organization in our city is doing more for Newport than this. It has aided largely in suppressing dangerous elements in private dwellings and in public places, and has at the same time materially aided in maintaining confidence abroad as to the sanitary condition of the city. When we remember how largely Newport is dependent on her good name for her prosperity, we shall be able to appreciate the importance of a sanitary organization of this character."

At the meeting of Aug. 10th, the swill nuisance, caused by the non-enforcement of the swill ordinance, passed a few months since, was the subject of discussion. Since the last meeting, the city has taken in hand the subject of the recent memorial from the Association

to the City Council, and caused to be built a culvert under the Old Colony R. R. track, giving a free circulation of tide-water through the basin, which was lately in so filthy and pestilential a condition.

At the meeting of Sept. 14th, it was voted that the Secretary address the Charity Organization Society, through its District Visiting Committee, stating the appreciation of the Council that the president of that society had consented to act with the Sanitary Committee to award the prize for the best sanitary condition of premises, as set forth in the circular of the Association; and to ask for suggestions that may lead to the co-operation of their society with our own upon sanitary matters.

By vote the Secretary was directed to memorialize the Board of Aldermen, as a Board of Health, calling upon them to have placed immediately upon premises infected with scarlet fever, placards, as recommended by the late Advisory Board of Health, and carried out by the late city authorities.

On motion of Dr. Storer, it was also voted that the Council of the Sanitary Protection Association memorialize the City Council of Newport, to the end that it take action upon its petition presented at the first meeting of the present City Council, for the appointment of a permanent Board of Health, in accordance with the law passed at the last session of the General Assembly, empowering the whole City Council, and not the Board of Aldermen alone, to take such action.

At the meeting of Oct. 12th, the question was raised by Dr. Storer whether the Advisory Board of Health, appointed last year by the City Council, had in reality ceased to exist, in default of notification to this effect, or appointment of their successors, by the Board of Aldermen, and Dr. Rankin, a member of the Advisory Board of Health, was requested to ascertain the true state of the case, and report at the next meeting.

At the meeting of Nov. 9th, on motion by Dr. Rankin, Mr. Burdick, the chairman, the corresponding and the recording secretary were appointed a committee to prepare a petition for a Board of Health, and arrange to have it circulated and signed as generally as possible by the citizens.

The proposed systems for the sewerage of the city were discussed, and Dr. Storer presented to the meeting the report of the Committee on Streets and Highways of the City Council on a Plan of Sewerage for the City of Newport; also a summary of Col. Waring's plan, published in the Newport *Mercury*; and the supplement No. 8, National Board of Health Bulletin, containing among other things of general interest the report of Col. Waring upon the Gauging of Public Sewers.

At the meeting of Dec. 14th, Dr. Child stated that he had to present to the Council a matter of very grave importance, and one which came legitimately under the cognizance of the Association, viz.: the contamination by sewage of the water of a pond, and consequently of the ice of that pond, which is to be given to the people of Newport for their consumption. He had been informed by a responsible party that the owner of Almy's Pond had given permission to one or more persons living in that vicinity to drain their sewage to his pond.

This statement was corroborated by Dr. Rankin, who was acquainted with the facts in the case, and had endeavored, unavailingly, to

prevent its being done. The subject had been brought before the Advisory Board of Health some months ago, but on account of lack of influence with the Board of Aldermen, they had not taken hold of the matter.

It was voted that a committee of three be appointed to investigate thoroughly the draining of sewage into Almy's Pond.

Jan. 11, 1881.—A letter was read from a lady member, stating that sewage matter was being emptied from wagons into the public highway, at a distance of about two hundred and fifty feet from her dwelling, and asking if the Association could act in the premises. The Secretary was instructed to communicate with the Inspector of Nuisances, and ask him to prevent its recurrence.

The report of the Committee upon Almy's Pond was called for. The Chairman of that Committee stated that they had found the condition of things fully as bad as had been represented, but more time was required for a complete investigation.

The Secretary was directed to forward to the chemist of the Association, for analysis, a sample of the water of the pond, and also a sample of the melted ice. These to be taken at a point which would give a fair average of what is to be given to the public for their consumption.

Mrs. H. G. Tilton proposed to the Association that it should inspect the plans of her house, now building, and advise in relation to the plumbing and draining of the same.

By vote, upon motion by Dr. Rankin, the Chair appointed Messrs. Davis, Collins and Rankin to be a committee to examine the plans, and, if necessary, bring them before the Council; and to report upon a method by which the Association can be assured that the work is done in a thorough manner, and in full accordance with the specifications.

Mr. Davis asked that the same committee also take in charge the supervision of the plumbing which was now being put in by the Cliff Cottage Association, the name of which Association he formally presented for membership.

The Chair announced that, with the sanction of the Council, and in view of the magnitude and importance of the undertaking, he would increase the number of the Committee, and would add the names of Dr. S. W. Francis and Mr. E. M. Stedman.

Feb. 8th.—On motion of Mr. Mason, it was voted that in order that there might be no appearance of any unfairhanded dealings, the Newport Ice Company be notified by the Committee having the matter in charge, of what the Association had done, and what it proposed to do, in relation to the ice of Almy's Pond.

Mr. Burdick said that Mr. Green, of the ice company, had conversed with him in regard to the purity of the water of both Lily and Almy's Ponds, and would be in a measure prepared for the communication of the committee.

Mr. Burdick asked to be excused from serving on the committee on account of his being interested, officially, against the ice company in the Hazard will case.

On motion of Dr. Rankin, Mr. Burdick was excused and Prof. Pumpelly, of the U. S. Geological Survey, was appointed in his place.

A communication had been received by Rev. Dr. Child, from the National Board of Health, stating that they were prepared to have analyzed, free of expense to the sender, all samples of water, to the use of which sickness could be distinctly traced, and the Doctor suggested that the Corresponding Secretary be authorized to communicate with them upon the subject of the ice supply of Newport. A motion to this effect was carried.

The Chair asked for information as to what action had been taken by the City Council in relation to the petition for a Board of Health, presented at their last meeting. He was informed that nothing had been done.

Prof. Pumpelly stated that he had lately caused some extended experiments to be made for the National Board of Health, which, among other things, had shown that one hundred feet of the finest sand offered no resistance to the passage of certain impurities in water.

March 8.—Prof. Pumpelly reported progress of the Committee to whom had been referred the question of the ice of Almy's Pond. In accordance with instructions from the Council, the Newport Ice Co. had been notified that the investigation had commenced. In addition to this, the Corresponding Secretary had requested aid from the Water Analysis Committee of the National Board of Health, and its Chairman, Prof. Mallet, of the University of Virginia, had promised their cordial co-operation, asking at the same time for reports of any cases of disease that could be traced either to the ice or water of the pond. Experiments had already been commenced in the Newport Laboratory of the U. S. Geological Survey, in furtherance of the inquiry to solve the question whether ice destroys, or merely temporarily checks the vitality of low organisms, whether adult or germ.

Dr. Child remarked upon the extreme interest and importance of the whole subject, and expressed his satisfaction that the Association had been able to secure for the inquiry the assistance of experts of such universally acknowledged authority and skill.

Dr. Storer mentioned that it had been asked at the last meeting, whether any action had been taken by the City Council upon the numerously signed petition for a permanent Board of Health. A month had since then elapsed, and the answer was still in the negative. Mr. Davis said that this petition represented a very large portion of the whole taxable property of the city.

Dr. Child asked if any notice at all had been taken by the City Council. Mr. Davis replied that no action had been taken save informally. The petition had not been referred to any committee.

Dr. Child asked if the matter ought to be permitted to end at this point.

Mr. Davis thought that it certainly should not be allowed to do so. It was at the request of the Board of Aldermen that the petition had been treated as it had been by the lower branch.

With reference to the main question, the necessity of a separate Board of Health, Dr. Storer read from a letter upon the Sanitary Condition of Newport, by Dr. E. S. F. Arnold, published in 1877, in Bowditch's Public Hygiene of America, a book of very extended circulation. Dr. Arnold had been for several years, and was still, the consulting

surgeon to the Newport Hospital. Dr. Storer also read extracts from the Second Annual Report of the R. I. State Board of Health, namely: from a report upon the condition of Newport, by Dr. Rankin, in which he states that the prevalent diseases of Newport are owing to bad water and bad drainage, and that he had never yet attended a case of typhoid fever or diphtheria here, in which there did not prove to exist defective drainage; and from a letter addressed to the State Board of Health by Mr. Burdick, the Mayor of Newport, in which are given the health ordinances that had recently been passed.

From this letter, it appears that the Advisory Board of Health was to hold office "until such time as suitable legislation can be procured for the creation of a separate Board of Health," and by implication, until the appointment of such a Board. The Advisory Board had, however, been deliberately discontinued by the Aldermen, although no separate Board as yet exists.

It is shown that the keeping of swine is forbidden, under penalty of fine. The Board of Aldermen still permit the keeping of swine, and no fines are imposed.

It is shown that all vehicles for the removal of swill, garbage, or the contents of cesspools, must be legibly and conspicuously numbered, under penalty. Such vehicles, however, are not thus numbered, and the fines are not imposed by the Aldermen.

It is shown that physicians are directed to report, in writing, all cases, however slight, of measles as well as of other infectious, contagious, or epidemic disease, under penalty. This ordinance, also, has been constantly violated, and not the slightest attempt to enforce it has been made by the Board of Aldermen.

The State Board of Health, while warmly commending the efficiency of Mayor Burdick, states that these ordinances "doubtless reflect the public sentiment of Newport in relation to general sanitation," ignorant that the same public sentiment was almost immediately to turn Mr. Burdick from office, for his efficiency, and to give warrant for the most flagrant violation of every one of the ordinances so warmly praised.

Dr. Child recalled to the memory of the Council that the Navy Department had at one time failed to find a single well in the city, save one at the Point, the water of which was fit to be put upon its vessels.

(*To be continued.*)

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Danger Ahead.—If a man has a little pain in his foot he runs to his family physician for a prescription of potash or to be told that he must not drink sherry. When he is about to hire a house he never thinks of asking his physician, who is generally an amiable man if dutifully cross-questioned, whether he is moving into a healthy neighborhood, or whether the house is properly ventilated and drained.

SANITARY PROGRESS.

The extent of the excellent papers, and of the discourses on purely medical or curative science at the International Medical Congress, precluded more than very slight attention being given to sanitative or preventive science, and prevented a notice of the means of the reduction of a percentage of sickness or death rate by it, or by curative science. Since the Congress was held the report of the Local Government Board has appeared, and contains a statement of the progress of sanitary work in England and Wales, to which public attention may now be well directed, both in justice to the subject and to the services of the new local health officers appointed, and acting, yet, with very imperfect attributions and functions. The statement of the report is as follows:

"Before concluding the part of our report which relates to sanitary administration, it may be useful to draw attention to the annual death rate for some years past, as indicating the effect which recent sanitary measures would appear to have had upon the public health.

The following table shows the death rate for each of the four last decennial periods:

ENGLAND AND WALES.

Annual death-rate per 1,000.	1841–50:	1851–60.	1861–70.	1871–80.
All causes	22.4	22. 2	22. 5	21. 5
Seven zymotic diseases	...	4.11	4.14	3.36
Fever	....	0.91	0.88	0.49

From the above figures it will be seen that, speaking generally, the death rate of the country remained stationary from 1840 to 1870, but that in the period 1871–80 it fell from 22.5 (of the previous decade) to 21.5, a reduction equivalent to nearly 4½ per cent. It may, therefore, be roughly estimated that about a quarter of a million of persons were saved from death in the 10 years 1871–80, who would have died if the death rate had been the same as in the previous 30 years. If 12 cases of serious but non-fatal illness be reckoned for every death, it follows that about three million persons, or over one-ninth of the whole population, have been saved from a sick bed by some influences at work in the past decade, which had not been in operation previously. The case, indeed, is still stronger than this. The death rate of rural districts is habitually lower than that of urban districts; and as the population is steadily concentrating itself more and more into the towns, the death rate of the whole country would tend to increase, if the other circumstances affecting it remained the same. When we find that this tendency has been so much more than merely counteracted, it becomes interesting to see where the gain has been, and to endeavor to trace some of the causes to which it may be due.

Comparing, then, 1861–70 with 1871–80, it will be seen from the foregoing figures, that of the entire reduction of 1.0 in the death rate, more than three-quarters (4.14—3.36=0.78) comes under the head of

"The Seven Zymotic Diseases," of the diseases, that is, which are most influenced by sanitary improvements, and most amenable to control by the action of sanitary authorities. And of this three-quarters, just half (0.88—0.49=0.39), or three-eighths of the entire reduction, is in "Fever," the disease which, more than any other, shows itself in connection with such faults of drainage, of water supply and of filth accumulation, as it is within the province of good sanitary administration to remove.

It is particularly significant that, since the year 1870, when the fever death rate was 0.80 per thousand, it has fallen pretty steadily, year by year, as follows, down to 0.32 in 1880 :

1871	70	1876	44
1872	61	1877	41
1873	58	1878	42
1874	59	1879	30
1875	55	1880	32

Thus in the five years 1871–5, the fever death rate was 0.61; in the five years 1876–80 it was 0.38.

During the decade from 1861 to 1870, there appeared to be no gain from the outlay on sanitary works or on sanitary service in England and Wales; but since then the service appears to have made an effective start, and the pecuniary gain may be thus stated: Under the inquiry as to interments, the cost of funerals—all around—was ascertained to be £5 each. The gain under that head will, therefore, be about one million by the quarter of a million of funerals saved during the last decade. The direct cost of sickness has been estimated at about £1 per case. The gain under that head during the decade will therefore amount to about three millions; a gain, that is to say, of medical treatment and other expenses. But the gain to the wage classes, from the saving of lost labor, will have been far greater. Dr. James Watts, who has had great experience in friendly societies, states the average loss of working time at 2½ working weeks per member between 21 and 70 years of age, and he estimates the total loss to the wage classes by the loss of work through sickness, at upwards of thirteen millions per annum. The gain derivable from sanitation may be further illustrated from its advance in military service. The first British army went out to the Crimea under the established curative or medical service, and it was lost. Sanitary Commissioners, trained in service under the first General Board of Health, were then sent out to reform the condition of hospitals and camp, and within three months reduced the sickness and mortality from a plague-rate down to an ordinary standard of health, and by the end of the summer of 1855, to a rate lower than that of the best hospitals at home; and the War Minister declared in Parliament that by the application of their science the second army had been saved. Since then the Army Medical Department has applied extended sanitary operations. Their exercise under great difficulties, is best shown in India. Formerly the death rate in the Indian army was 69 per 1,000 per annum. The average mortality from 1869 to 1878 was only 20.41. There was, therefore, a gain of 48.59 per 1,000; or, on the present force out there, a gain of 2,350 men. The death rate of the army at home was formerly 18 per 1,000. In the year 1879 it was 7.55, being a gain of

10.55 per 1,000. As the strength of the army in 1879 was 80,700, the gain was 843 per annum. The total gain to the army in India and the army at home and the rest of the army will be 3,443 men per annum. As each soldier is estimated at £100, this represents in money value £344,000, or more than a third of a million. It is not very easy to get at the real amount of the sickness; but the total gain, including the diminished death rate, is considered to be underrated at half a million per annum.

The total number of men killed on the battle-field and on the deck, including those killed at Waterloo, Trafalgar, and the most severe battles during the twenty-two years' war, was, according to the Army Returns, 19,796. The lives saved from premature destruction by the civil sanitary service during each of the ten years of the decade, was 25,000. The wounded during the twenty-two years' war was 79,709; but, taking a serious sickness as equivalent to a wound, the achievement of the sanitary service has been, during the same period, some three millions of cases saved by the civil sanitary service. The deaths by steam explosions, in mines and on railways, amount to about five thousand annually, but the lives saved by the civil sanitary service in England and Wales are five-fold greater than the lives thus destroyed by civil accidental violence. A reduction of the death rate by 4½ per cent. is only an installment of sanitary progress. Thus, in the instance of Croydon, visited by the delegates of the Congress, the death rate has been reduced from 25 to 16 per 1,000, chiefly by the methods introduced by the first General Board of Health, by which spring supplies of pure water are carried into the houses, and the fouled water carried at once out of the houses and out of the town, by one Local Board authority, while all putrescible matter, instead of remaining for months and years in conditions of putrefaction, is undecomposed, and flows upon the land within two hours. So in Salisbury, Leamington, and a number of other places. At Croydon, it has been stated by Dr. Alfred Carpenter, that, by complete sanitation, the death rate might be reduced to 10 in a thousand. In the metropolis the death rate amongst the wage classes in their common dwellings is upwards of 30 per thousand. In the model dwellings in London, it is, however, about 16 or 17, even with surrounding deteriorating conditions. On the demonstrations of various model instances, it may be held that the reduction of the general death rate by 4¼ per cent., as reported, satisfactory as this is, cannot be considered more than one-third of the results obtainable by advanced sanitary administration and further sanitary works. The pain and misery, and the social disorder occasioned by excessive sickness and premature mortality, are generally beyond pecuniary estimation. Such estimates as those given serve to show the money loss incurred, by inattention to the continuance of preventable physical evils.

EDWIN CHADWICK.

London, September 22, 1881.

Wilkins Micawber longed for something to turn up, as rapid writers longed for a steel pen to write like a quill. With this purpose, Esterbrook years ago concluded to turn up the points of three of their pens, the Tecumseh, Choctaw and Telegraphic.

THE CONTAGIOUS DISEASES ACTS OF GREAT BRITAIN.

By ALBERT L. GIHON, M.D., Medical Director U. S. Navy, Chairman of Section on State Medicine, American Medical Association.

The beneficial effects of the Contagious Diseases Acts of Great Britain, in restricting the spread of venereal disease, limited as is their operation, is conclusively demonstrated by the extracts given below from the *Statistical Report of the Health of the Navy for the year* 1879, presented to the Right Honorable The Lords Commissioners of the Admiralty by the Director-General of the Medical Department of the British Navy, John W. Reid, M.D., and ordered, August 24, 1880, by the House of Commons, to be printed. The compilation is the work of Dr. J. N. Dick, R.N., Deputy Inspector-General of Hospitals and Fleets, and its numerical facts are indisputable, and complete refutation of the misstatements by certain societies and individuals, which are protesting against the police control and sanitary supervision of public prostitutes, on the pretexts, first, that these are infringements of their civil and political rights as members of society; second, that they are indignities to them as women; and third, that the only effect of such regulations has been to actually increase the amount of venereal disease at the places where they have been attempted.

Return showing the Number of Cases of Venereal Diseases, in Her Majesty's Ships and Vessels, stationed at five Home Ports, at which the Contagious Diseases Acts have been and are in operation; and the Number of Cases in Her Majesty's Ships and Vessels, at five Home Ports, at which the Contagious Diseases Acts have never been applied, from the year 1860 *to the year* 1879, *inclusive; together with the Ratios per Thousand of Force for the Ports under the Acts and the Ports not under the Acts.*

PORTS UNDER THE ACTS.

PERIOD.	Average Annual Complement Corrected for Time.	Average Annual Number of Cases of Syphilis.			Ratios Per 1,000 of Force.			Average Annual Number of Cases of Gonorrhœa.	Ratio per 1,000 of Force.
		Primary.	Secondary.	Total.	Primary.	Secondary.	Total.		
No acts in force ..... 1860–63.	9,050			679			75.02	240	26.51
Act of 1864 in force .. 1864–65.	10,010			792			79 12	224	22.37
Acts of 1866 and '69 in force, 1866–70.	10,340	359	129	488	34.72	12.47	47.19	292	28.23
Acts of 1866 and '69 in force, 1871–79.	11,080	319	123	442	28.79	11.10	39.89	696	62.81

PORTS NOT UNDER THE ACTS.

	Period.	Average Annual Complement Corrected for Time.	Average Annual Number of Cases of Syphilis.			Ratios per 1,000 of Force.			Average Annual Number of Cases of Gonorrhœa.	Ratio per 1,000 of Force.
			Primary.	Secondary.	Total.	Primary.	Secondary.	Total.		
No Acts in force.	1860–63.....	1,670			117			70.05	49	29 34
	1864–65.....	1,540			154			100.	40	25.97
	1866–70	1,640	97	42	139	59.14	25.6	84.74	60	36.58
	1871–79.....	1,605	116	35	151	72.27	21.8	94.08	80	49.84

RATIO OF SYPHILIS CONTRASTED.

Period.		Ports Under the Acts.			Ports not Under the Acts.		
		Primary.	Secondary.	Total.	Primary.	Secondary.	Total.
No Acts in force	1860–63			75.02			70.05
Act of 1864 in force	1864–65			79.12			100.
Acts of 1866 and 1869 in force.	1866–70	34.72	12.47	47.19	59.14	25.6	84.74
" " " " " " "	1871–79	28.79	11.10	39.89	72.27	21.8	94.08

The contrast is all the more remarkable, since during the period when no Acts were in force anywhere, the particular ports now under the Acts, Dartmouth, Plymouth, Portsmouth, Queenstown (Cork) and Southampton, actually exhibited a greater ratio of syphilitic disease, *i.e.*, 75.02 per thousand, than those which have been selected for comparison as never having been under the Acts, Greenock, Hull, Kingstown (Dublin), Leith and Liverpool, where the proportion was only 70.05 per thousand. Furthermore, while the cases of syphilis have been drawn from complements of only 1,600 men at the ports not under the Acts, the number of individuals furnishing the cases at the ports under the operation of the Acts, have been over 10,000. Yet, during the nine years intervening between 1870 and 1879, while 94.08 per thousand of the smaller number of men at unprotected ports contracted syphilis, only 39.89 in every thousand of the seven times greater force, comprising precisely the same class of persons, living under the same conditions, at ports enjoying the partial protection of the Contagious Diseases Acts, came upon the sick list from this cause; and in this connection, it must be borne in mind that "since the passing of the Acts, the

attention of the medical officers has been more closely directed to the registration of venereal diseases, and a large number of cases have been entered on the sick list and recorded, and now appear in the returns, which would not have been shown formerly." Consequently, great as the degree of improvement exhibited, the figures really fall short of showing all the good which has actually been accomplished. Inspector-General Dick states: "With reference to the increase of gonorrhœa shown in the above summary, it is necessary to note the fact that previous to the time of the passing of the Contagious Diseases Acts, it was not the practice of the Navy to place cases of gonorrhœa, unless severe ones, upon the sick list; thus the majority of cases were not recorded," but, notwithstanding this omission, the respective ratios are only as 62.81, where every form of lesion, however mild, is recognized and registered, against 49.84 where only the severest cases come within the cognizance of the medical officers and appear in the official returns.

The total amount of venereal disease throughout the British Navy during the year 1879 appears from the recent annual report of the Director-General to have been 140.19 per thousand of strength—of syphilis alone 57.76. Among every thousand men in the service, forty-five were daily rendered unfit for duty by reason of sickness, and of these ELEVEN, *one-fourth of all the sick*, were disabled by venereal diseases. In the face of these facts, what unprejudiced thinker, having an earnest regard for the efficiency and economy of the public service and a sincere interest in the physical and moral welfare of the great body of men, who are the nation's charges, can dispute the wisdom of the attempt the British Government has made to prevent the spread of these diseases by the enactment of the Contagious Diseases Acts!

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Boston's New Sewers.—Work on the new sewers at Boston is said to be progressing satisfactorily. It is now expected that by the early spring the main intercepting sewer will be ready for use, and at least two of the mammoth pumps now being constructed will be in operation at the pumping station. More than two-thirds of the syphon of the proposed tunnel under Dorchester bay has been drilled, and good progress has been made on the masonry lining. The land section of the two sewers which are to enter into the sea at Moon Island are nearly completed, and the fill in which the sewer from Squantum to Moon Island is to be placed is finished. In some cases there has been failure on the part of the contractors, causing some delay in the work, though in each of these cases the city has prosecuted the work at the expense of the contractor. It is understood that the next Legislature will be petitioned to permit the temporary emptying of the sewage into Dorchester bay, as the engineers give assurance that no nuisance will result. It is now thought that the cost of the completed work will not much, if any, exceed the original estimate of $2,000,000.

DRAINAGE FOR HEALTH.

STATE BOARD OF HEALTH OF NEW YORK,
ALBANY, Oct. 15th, 1881.

To the Editor of "THE SANITARIAN," New York.

DEAR DOCTOR: As you have referred to drainage for overcoming the miasmatic condition of the bed of the abandoned canals, in Chemung, Schuyler, and Livingston Counties, probably your readers will be pleased to know something more about this matter.

Let me previse by stating that by section 8 of the organic law of the State Board of Health, complaints and petitions from citizens must be heard, and the Governor of the State may order this Board to investigate and report for his information, and for the relief sought in any community.

The following report, preliminary to action upon one of the abandoned canals, dated May 30, 1881, and the message of the Governor thereon, dated June 1st, show how proceedings for sanitary work were initiated in the case you mention in the September SANITARIAN; this report being made on the day the preliminary inspection was completed:

"TO HIS EXCELLENCY, A. B. CORNELL, GOVERNOR: The undersigned, a committee of the State Board of Health appointed to report on the nuisance alleged to result from the abandonment of the Chemung Canal, would respectfully report:

"That they have made personal inspection of the places complained of and taken the testimony of physicians who have care of the people in the neighborhood. The amount of sickness is appalling, no family escaping the invasion of malarial diseases for a distance of two miles along the borders of the old canal, even children at breast becoming purple and shaking with the cold stage of intermittent. We find the prism of the abandoned canal has become a marsh. But we believe the whole danger can be removed by simply ditching, with a little filling at special points. We advise, if such work is undertaken, that the ditches be so protected at the sides as to be durable."

(Signed) E. M. MOORE, *President.*
May 30, 1881. ELISHA HARRIS, *Secretary.*

June 1st, the Governor presented this report to the Legislature, with this message:

"TO THE LEGISLATURE: The attention of the Legislature is respectfully, but earnestly, called to the importance of providing for the prompt abatement of a nuisance emanating from the present condition of the abandoned Chemung Canal, and dangerous to the health and lives of people living in the immediate vicinity.

"The report of the State Board of Health, to whom the complaint of citizens was referred for investigation, is herewith transmitted, from which it will be seen that great suffering is now felt in consequence of the neglect of the State to provide suitable protection against the evils complained of.

"It is hereby recommended, therefore, that the Superintendent of Public Works be authorized to take the necessary steps to remedy the existing difficulty, and that suitable appropriation be made for that purpose." (Signed) ALONZO B. CORNELL.

Soon after the Legislature had acted upon this message of the Governor favorably, further recommendations to the Legislature were made by him, upon a report of this Board concerning the miasmatic condition of the abandoned Genesee Valley Canal. The final legislative action, as recommended by the Governor and this Board, resulted in the following enactment:

SECTION 1. The Superintendent of Public Works, under advice and direction of the State Board of Health, is hereby authorized and required to make such improvements, by ditching, draining, culverting and otherwise, as shall secure suitable drainage of the bed of the Chemung Canal, from Havana, or lock number two, in the county of Schuyler, to Horseheads, in the county of Chemung, and also along the line of the late Genesee Valley Canal, in the towns of Groveland and Mount Morris, and their vicinity; such drains, ditches, culverts, or other work shall be of permanent and lasting character.

§ 2. The sum of six thousand dollars, or so much thereof as may be necessary, is hereby appropriated for the purposes aforesaid, payable by the State Treasurer, on the warrant of the Comptroller, out of any funds not otherwise appropriated, to the Superintendent of Public Works, to be by him expended for the purposes defined in section one of this act.

After this appropriation, the work of draining the artificial swamps, which had been created in the bed of these canals, was commenced by the Department of Public Works, under the direction of the State Board of Health. Reports filed in this Board's office in September give us the following, among other, important facts. "Work was begun by the Department of Public Works, under the immediate direction of Mr. F. S. Uhle, July 6, 1881, at lock 27, in the village of Millport, this being considered the most fruitful source of malaria on the canal. July 7th, work was begun on the level between locks 42 and 43, near Pine Valley. From these points the work was carried along from 1¼ miles south of lock 44 on the long level to lock 2 at Havana, a distance of nine miles.

"The manner in which the work was performed reflects great credit on Mr. U., who superintended it, and shows that he was keenly alive to a sense of sanitary duty. He had an average of 70 men at work all the time. . . . . .

"The plan adopted was, to drain the water from the various stagnant pools, and the bed of the canal, by a small ditch, made in the quickest possible time, and then, after such places became dry, cut a sufficient ditch to keep them permanently so. . . . . Twenty cuts in all were made through the tow-path at the most available points for drainage, and thirty of the forty-three levels ditched. . . . . .

"The effect in the health of the community residing in the immediate vicinity of the abandoned canal is very gratifying. During the month of June there were 118 cases of malarial fevers of all kinds. Of this number 96 were at and near Pine Valley, 5 at Pine Valley Bridge, 16 at Millport, 1 between Millport and lock No. 2. During the

month of July there were 93 cases of malarial fever; 72 at Pine Valley, 13 at Millport, 8 at Pine Valley Bridge.

"During the month of August there were 31 cases of malarial fever; 30 at Pine Valley, 1 at Pine Valley Bridge.

"The village of Pine Valley has 250 inhabitants, Pine Valley Bridge 125, and Millport 500."

Numerous complaints of miasmatic pools and artificial swamps in the bed of the abandoned Genesee Valley during the latter part of June, led the State Board to investigate the cause; and although most of the canal had already come into the possession of certain railroad companies, the Legislature authorized such drainage works as could be executed by the State.

Dr. L. J. Ames, of Mount Morris, and Emil Knichling, C. E., undertook for this Board the necessary supervision of the work which has, during the past two months, been executed from Dansville, through Sparta, West Sparta and Groveland; and now upon the sanitary surveys and recommendations of the State Board of Health, the Governor has ordered the railroad company to execute the same kind of work under the direction of this Board, through Mount Morris, Leicester, York and Caledonia; that is, from Kashaqua Creek to Allen's Creek, a distance of twenty-nine miles.

The type and results of the miasmastic fever which has been prevailing the past two summers along the canal warrant the conclusion that the swampy condition of the canal bed is greatly aggravating any pre-existing malaria along the course of the abandoned canal.

Two most valued lives of educated and philanthropic ladies have recently been sacrificed in their dwellings upon the western border of the canal near Mount Morris and York. The people in that region justly say that either one of those lives was worth more to the community than the entire cost of thoroughly draining the canal bottom.

Town Boards of Health have been organized under the new law in all the townships I have here mentioned; and befo re many months have passed, the public health in all that region will, we trust, be well protected.

Respectfully, ELISHA HARRIS.

———o———

There's a Virtue in Whistling.—An old farmer once said he would not have a hired man on his farm who did not habitually whistle. He always hired whistlers. Said he never knew a whistling laborer to find fault with his food, his bed, or complain of any little extra work he was asked to perform. Such a man was generally kind to children and to animals in his care. He would whistle a chilled land into warmth and life, and would bring in his hat full of eggs from the barn without breaking one of them. He found such a man more careful about closing gates, putting up bars, and seeing that the nuts on his plow were all properly tightened before he took it into the field. He never knew a whistling hired man to beat or kick a cow or to drive her on a run into a stable. He had noticed that the sheep he fed in the yard or shed gathered around him as he whistled, without fear. He never had employed a whistler who was not thoughtful and economical.

MENU.

Buckwheat, as human food, is almost peculiarly American. This is the more surprising, since it has been known from most ancient times, is among the most easily cultivated and fruitful of food products, suited to all temperate climates, and admirably well to the densely populated and exhausted lands of Great Britain and Europe. Its native country is uncertain, but generally supposed to be Asia, from which it is said to have been introduced by the Moors into Spain, and thence to have extended over Europe. Its English name is derived from the German *buckweizen*—from its resemblance to the seed of the beech tree. In France it is called *blé sarrasen*, or saracen wheat. It is considerably cultivated in France as food for cattle and poultry, but very little for human food. In England it is principally cultivated for feeding pheasants and other game. When used for human food, according to English writers, it is usually consumed as hasty pudding or pottage. Being "devoid of gluten," Pavy tells us, "it does not make proper bread." But Johnston (Chemistry of Common Life) states that "buckwheat flour is about as nutritious as English wheaten flour, and makes excellent cakes, which, when eaten hot with maple honey in the backwoods of America, are really delicious." This author had evidently travelled.

The fact is, buckwheat is quite as rich in nitrogenous material (gluten), as the best English or any other wheat, contains less starch, more fatty matter, more mineral matter, and, in short, more of the essential qualities for a good *winter* food, than any other bread grain except Indian corn. The manner of using it in this country it is unnecessary to state. But it is pleasant to know that by using Hecker's self-raising buckwheat flour, any one may have the hot cakes referred to by Johnston with the least possible trouble. As soon as the griddle is ready for baking, mix with *cold* water as much of the self-raising flour as necessary for the occasion and bake immediately. The batter should be a little stiffer than that made with yeast, and the addition of a couple of tablespoonfuls of molasses to a pound of the flour, after it is in batter, will add to the flavor and assist in giving that beautiful brown color characteristic of pancake perfection.

Corn Cake.—One teaspoonful of cream tartar, one tablespoonful of sugar, a little salt, one tablespoonful of melted lard or butter, one egg, half a teaspoonful of soda dissolved in a cup of milk; thicken to a batter with equal parts of corn meal and wheaten flour. This quantity is enough for three persons.

Scalloped Oysters.—Crush and roll several handfuls of soda crackers; put a layer in the bottom of a buttered pudding-dish. Wet this with a mixture of the oyster liquor. Next a layer of oysters sprinkled with salt, pepper and small bits of butter; then another layer of the moistened crumbs, then a layer of oysters and spice, and so on till the dish is full. Let the top layer be crumbs. Stick bits of butter thickly over it, and, for a two quart dish full, pour over a couple of glasses of wine; bake half an hour and serve hot.

Editor's Table.

The General Neglect of Physical Education and Hygiene in Schools, in the face of the demonstrated benefit derived therefrom, whenever and wherever applied, is among the most amazing inconsistencies of cultivated peoples. Two pamphlets before us prominently show this from different standpoints.* One from extensive inquiry and numerous official reports in England and European countries among the recruiting services, factory children and registrations, exhibiting the prevalence of preventable diseases and deformities where physical culture receives no attention ; and the other, the special benefit derived from its cultivation in a single institution in this country.†

In England and the United States military drill appears to be the almost exclusive, or rather substitute for, physical education, and this, as commonly practised, often does more harm than good from the inattention to the fitting of the dress and waist straps, its positive injury to boys under fifteen years of age, and its total inadaptability to girls, who stand quite as much in need of physical education as boys. Of instruction in practical hygiene, except in a few colleges, there is literally none. Even in the medical colleges, in the United States, especially, where "health officers" are annually turned out by the score, a knowledge of hygiene is not among the requisites for graduation. How to promote health and prevent disease is observable among medical students only from its opposite standpoint—the destructive effects of untutored habits.

In the common schools a comprehension of the benefits of physical culture and hygiene is first necessary among the teachers, trustees and superintendents, who, judged by our own observation, have not learned the rudiments of ventilation, have no conception of the importance of constrained posture, rarely regard the direction of the

* On the Neglect of Physical Education and Hygiene, by Parliament and the Educational Department, as the principal cause of the degeneration of the physique of the population, of the excessive infantile and general mortality, and of many diseases and deformities; with an abstract of a report on the Present State of Physical Education on the Continent, by Dr. Roth's Special Commissioner, and suggestions relative to the introduction of these neglected branches of National Education. Pamphlet, pp. 88, by D. Roth. London: Baillier & Co.

† A Report of Twenty Years' Experience in the Department of Physical Education and Hygiene in Amherst College. Pamphlet, pp. 18, by Edward Hitchcock, June 27, 1881.

light, estimate the necessities of space by the size of the children, and measure the power of children's endurance by their own. Of the absolute necessity of pure air and cleanliness, suitable dress and exercise, healthy temperature, proper food at stated periods, attention to the natural functions of the body, the care and cultivation of the organs of sense—all these things are ignored; or, in the ignorance of those whose duty it is to provide for their cultivation, are supplanted by some epitome of human physiology in the hands of a teacher who has never learned how to use it.

Dr. Roth appropriately remarks—after quoting from the Report of the Registrar General of England—that "the preservation of life depends upon careful attention to small things, and should be taught as part of common education." "As long as teachers are not trained in the knowledge of this 'attention to small things,' there is no hope for a diminution of the present excessive mortality." Nothing better illustrates the ignorance of people of the conditions of health than the advertisements and diffusion of quack medicines, and in the United States the so-called educational periodicals—the school journals—are no exception. Presumably, therefore, the readers of such journals are among the best patrons of quackery, or they would not receive this support.

Amherst College is a brilliant exception to this common neglect. Twenty years' experience in the department of physical education and hygiene in that institution show practical benefits which should commend this culture to all similar institutions. "During these twenty years 5,443 different *entries, not individuals*, have been on the Annual Catalogues. Of this number 1,365 were entered on the sick list, representing those who during their course have been absent from all college duties on account of sickness for more than two consecutive days in the term time. This gives a per cent. of the students by entries as at one or more times disabled by illness of 25.26. A noticeable point appears in the record of sickness as possibly showing the healthfulness of college life. It is the *decrease of illness from Freshman to Senior year*.... While the per cent. of Freshmen sick is 29.30, that of the Senior year is 19.05 .... The TIME LOST BY SICKNESS, as averaged on every student, is 2.65 days yearly." Instruction in anatomy, physiology and hygiene by illustrative lectures and text book. "The way in which students here are called upon to secure health, and its correct and normal maintenance for college requirements, is to be sure of some active, lively and vigorous muscular exercise at stated periods; not requiring a rigid military or hardening drill of certain portions of the body, but offering them such exercises as shall while regularly obtained be vigorous, pleasant, recreative, and at the same

time, even without a manifest consciousness of it, be called into exercise their powers in active, vigorous, easy and graceful movements."

Plumbers' Regulations.—Rules laid down by the Board of Health of New York for the proper performance of plumbing work. At a special session, October 11, 1881, rules and regulations for the registration of plumbers, and relating to plans and specifications for plumbing and drainage, were adopted, in accordance with chapter 450 of the Laws of 1881, passed June 4, the first section of which provides that every master or journeyman plumber, intending to carry on his trade, shall register on or before March 1, 1882. Among the rules adopted by the Board of Health, and approved by the Sanitary Committee, are that every plumber shall give immediate notice of his change of residence or place of business; that plumbing work must not be covered up or concealed until after it has been examined by the inspector of the Board of Health, and that the work be executed according to plans and specifications approved by the Board, as follows:

1. All materials must be of good quality and free from defects; the work must be executed in a thorough and workmanlike manner.
2. The arrangement of soil and waste pipes must be as direct as possible. The drain, soil and waste pipes, and the traps should, if practicable, be exposed to view for ready inspection at all times, and for convenience in repairing. It is recommended to place the soil and other vertical pipes in a special shaft, between or adjacent to the water closet and the bathroom, and serving as a ventilating shaft for them. It should be accessible at every story, and should have a very open but strong grating at each floor to stand upon.
3. Every house or building must be separately and independently connected with the street sewer by an iron pipe calked with lead.
4. The house drain must be of iron, with a fall of at least one-half an inch to the foot if possible, and it should run along the cellar wall, unless this is impracticable, in which case it should be laid in a trench cut at a uniform grade. All changes in direction must be made with curved pipes, and all connections with Y branch pipes and one-eighth bends. There should be an inlet for fresh air entering the drain just inside the trap, of at least four inches in diameter, leading to the outer air and opening at any convenient place not too near a window. No brick, sheet metal or earthenware flue shall be used as a sewer ventilator, nor shall any chimney flue be used for this purpose.
5. Every soil pipe and waste pipe must be of iron, and must extend at least two feet above the highest part of the roof or coping, of undiminished size, with a return bend or cowl. It must not open near a window nor an air shaft ventilating living rooms. Horizontal soil and waste pipes are prohibited. There should be no traps on vertical soil pipes or vertical waste pipes.

6. All iron pipes must be sound, free from holes, and of a uniform thickness of not less than one-eighth of an inch for a diameter of two, three or four inches, or five thirty-seconds of an inch for a diameter of five or six inches. Before they are connected they must be thoroughly coated inside and outside with coal tar pitch, applied hot, or some other equivalent substance.

7. All joints in the drain pipes, soil pipes and waste pipes must be so calked with oakum and lead, or with cement made of iron filings and sal-ammoniac, as to make them impermeable to gases. All connections of lead with iron pipes should be made with a brass sleeve or ferule. All connections of lead pipe should be by wiped joints.

8. Every sink, basin, wash tray, bath, safe and every tub or set of tubs must be separately and effectively trapped. The traps must be placed as near the fixtures as practicable. All exit pipes should be provided with strong metallic strainers.

9. Traps should be protected from siphonage by a special metallic air-pipe not less than one and one-half inches in diameter; if it supply air to a water-closet trap, not less than two inches in diameter, the size to increase with the number of water closets. These pipes should extend two feet above the highest part of the roof or coping, and if independent of the upper end of the soil pipe, this extension should not be less than four inches in diameter, to avoid obstruction from frost. These air pipes must always have a continuous slope, to avoid collecting water by condensation.

10. Every safe under a washbasin, bath, urinal, water closet or other fixture must be drained by a special pipe not directly connected with any soil pipe, waste pipe, drain or sewer, but discharging into an open sink upon the cellar floor or outside the house.

11. No waste pipe from a refrigerator shall be directly connected with the soil or waste pipe, or with the drain or sewer, or discharge into the soil, but it should discharge into an open sink.

12. All water closets inside the house must be supplied with water from a special tank or cistern, the water of which is not used for any other purpose. The closets must never be supplied directly from the Croton supply pipes. A group of water closets may be supplied from one tank, if on the same floor and contiguous. The overflow pipes from tanks should discharge into an open sink or into the bowl of the closet itself, not into the soil or waste pipe, nor into the drain or sewer. When the pressure of the Croton is not sufficient to supply these tanks, a pump must be provided.

13. Cisterns for drinking water are objectionable; if indispensable, they must never be lined with lead, galvanized iron or zinc.

14. Rain-water leaders must never be used as soil, waste or vent pipes; nor shall any soil, waste or vent pipe be used as a leader.

15. No steam exhaust will be allowed to connect with any soil or waste pipe.

16. Yards and areas should always be properly graded, cemented, flagged or well paved and drained by pipes discharging into the house drain. These pipes should be effectively trapped.

17. No privy vault or cesspool for sewage will be permitted in any part of the city when a sewer is accessible.

Important Researches in regard to Trichinæ—Southern bred Hogs said to be Exempt from the Parasite.—At a meeting of the New Orleans Auxiliary Sanitary Association, October 8th, Dr. J. T. Payne read a report on examinations of pork, which he had made since April last in quest of trichinæ. From 21,600 specimens taken from 5,400 hogs, he found 22 hogs infected.

The animals examined were reported as having been received from the following localities:

Tennessee, 1,060: Ouachita, 2,473; St. Louis, 529; Texas, 57; Mississippi. 158; New Orleans, 116; West, 484; England, 2; Louisville, 241; Unknown, 280. Total, 5,400.

The infected animals were reported as having been received from the following places: St. Louis, 18; Louisville, 2; and two from the "West," marked "Unknown."

He attributes the exemption of Southern bred hogs to the difference in habits and food.

The hogs slaughtered in New Orleans are for the most part brought from the Ouachita district, St. Louis, Kentucky, Tennessee, Mississippi, and a few from Texas. They live on mast, and their fat has an oily, oozy character that does not harden under the application of ice. The Ouachita hogs are less valuable for food, and fetch less money than the St. Louis hogs, which are nearly always corn fed animals. The Mississippi and Tennessee hogs are clover fed.

The Louisville hogs for the most part are corn fed, but a considerable number are fattened on swill, slops and offal. The finest hogs as to appearance when dressed and ready for market are those that have been fattened on offal. The skin and fat have a peculiar white and fair appearance, and the muscular fibre is of a pinkish and life-like color, and it is not strange, therefore, that this sort of meat finds a ready sale when exposed on the stalls of the markets. The microscope changes wonderfully our preconceived notions about the value of pork as an article of food. Meat that appears well to the unaided eye is found to be of poor quality and undesirable when its parts are examined under a good glass. This is true in a high degree in the case of offal fattened pork. As seen by the microscope, the structure commonly has an ill-defined and cloudy appearance, and there are dark spots, as if the substance were infiltrated with particles of dirt. The Ouachita hogs as a whole showed a variable structure, some of the muscular fibre being well formed, and in other instances there were signs of fatty degeneration, and a partial disorganization of the cells.

The corn-fed hogs of St. Louis, when healthy, showed the best structure under the microscope, and were every way the most to be desired for food. The striated fibre of the muscles came out with wonderful clearness, as if the lines had been drawn by a graver's tool. Then, too, the corn-fed hogs are much heavier than hogs of apparently the same size not so fed, and in commerce they have the first consideration.

Dr. Payne further remarked that, although the design at first was to notice no other parasite than trichinæ, it was proper to mention some other entozoa he found. It was almost of daily occurrence that

he noticed long round worms in the small intestines of the hogs. The worms appear to be about an eighth of an inch in diameter, and from six to twelve inches long, and are pronounced by Dr. T. Spencer Coffold to be identical with the ascaris lumbricoides found in the alimentary canal of human beings. Another parasite was found in the muscles of twenty or more mast-fed hogs. The worm was straight with a blunt head, the diameter, unmagnified, about the same as a human hair, and about one-eighth of an inch in length.—*New Orleans Times.*

New Orleans' Exemption from Yellow Fever. Professor Stanford E. Chaille, a medical practitioner in New Orleans for the past twenty-five years, one of the most diligent students of, and celebrated living authorities on yellow fever, in a paper before the New Orleans Auxiliary Sanitary Association, September 22d, stated that up to that time, this year :

"Not only has no death from yellow fever occurred, but no case ; not only no case, but no suspicious case, and not only no suspicious case, but no alarming rumor of one. All this is so extraordinary that, during the past sixty years at least, there has been only one year, 1861, in which no death by yellow fever was recorded. In January of this solitary year of exemption, Louisiana seceded from the United States, and its coast was soon thereafter blockaded. When this extra ordinary concurrence of the blockade and of our exemption from yellow fever in 1861 is associated with the facts that New Orleans escaped yellow fever, as is alleged, in 1808, and in 1812-1815, when the Embargo Act and the war with Great Britain suspended its commerce, that there were no epidemics here in the civil population during the four years of our recent war, and that there has never been greater quarantine vigilance than this year, the conclusion cannot be escaped, that those have strong evidence in their favor who contend that efficient quarantines serve, at least, to greatly reduce our numerous annual risks of infection.

"To what cause has our total exemption this year been due? Has it been due to luck, including in this all causes which we cannot or have not controlled ; or has it been due to such improved local sanitation as the great extension this spring of your valuable measure, which causes fresh water to flow daily through those streets perpendicular to the river, or has it been due to increased quarantine vigilance? While strong arguments can be adduced in favor of luck, I prefer to call your attention to my conviction that the 'Lord helps those who help themselves,' and that in as much as we have done something to protect ourselves, we have in a measure deserved our luck. It is my belief, after thirty years' experience, that our local sanitation, notwithstanding many and grave deficiencies, was never, on the whole, as good ; that official sanitary organizations were never more vigilant and active ; and that never before had these officers both the power and the will to execute so efficient a quarantine. But not one of these means for protection is perfect, and if this community would enjoy continued exemption from yellow fever, it must vigorously persevere to perfect all protective measures. Thus

alone can we deserve success, thus alone can we command, in case of failure, the sympathy, confidence, and if need be, the aid of our neighbors."

This year has proved that New Orleans need not annually either originate or import yellow fever. This city is now free from this poison, and, therefore, can be kept free more readily than heretofore. —*New Orleans Democrat.*

State Boards of Health. The admirable progress of the New York State Board is shown by the communication of Dr. Harris on other pages.

CALIFORNIA—During the month of August reports 469 deaths in 26 cities and towns, embracing an aggregate population of 354,968, an annual death rate of 15.84 per 1,000. Diarrhœal diseases, including cholera infantum, only 13, or 2.9 per cent. Contagious diseases, 11, 9 of which were from small-pox, in San Francisco, an increase of six fatal cases over July. Two cases have also occurred at Hanford, Tulare County. "With regard to the origin of the disease," Dr. Muir writes, "nothing is positively known."

CONNECTICUT reports for the month of August, as a whole, more than the average amount of sickness, especially as compared with the two previous years. Hartford shows the highest death rate and indeed the largest aggregate mortality—102; 27 of the deaths are from cholera infantum; 46, a large percentage, are of children under 5. Malarial diseases hold their own here as elsewhere in the malarial region. No new area of invasion is reported. While in New Haven and Hartford and the regions around both cities malarial diseases are not increasing, but rather the reverse, still the severity and obstinacy of the cases are increasing, as well as the mortality therefrom. Typhoid fever appears rather earlier than usual. From many towns cases are reported, one or two in each town; not markedly prevalent anywhere, but pretty well diffused for so early in the year. Diphtheria is reported as quite frequent in Naugatuck; four cases in one family, where the cause was apparently bad drainage. The cesspool was immediately under the windows of the kitchen and pantry, with a wooden spout leading to it, and its contents percolated through the cellar wall, only three feet distant. It is singular that while people will believe that ditches will collect water from the soil for quite a distance, they will not believe that dirty muds will run into their wells from privy vaults or cesspools only a few feet distant.

IOWA.—In the list of the secretaries of the State Boards of Health in October number, an error was committed in assigning the P. O. address of Dr. R. J. Farquharson. It should have been Des Moines.

President Garfield's Wholly Unpreventable Death by the assassin's wound, as finally displayed by the post-mortem examination, created from the first a very natural desire by the public to learn all the facts in the case; and, eventually, in the protracted sufferings of the illustrious patient, the desire became universal, not only to learn all the facts, but eager for every incident therewith connected—no matter how remotely. The latest news was not only everywhere sought, but the comments of self constituted critics, who arrogated to themselves more knowledge of the case than those who had charge of it from the beginning. For the time being such persons were a part of the stock-in-trade of the sensational portion of the public press, and were flattered by their notoriety, which they mistook for celebrity. In the final issue, they are in the unenviable plight of being the assassin's only apologists—the basis of his plea. To them he looks for acquittal—on the plea that the surgeons and not he committed the crime!

The Board of Health of Detroit has set a worthy example in the choice of a health officer—on known competency—regardless of politics or place of residence. Dr. O. W. Wight, of Milwaukee, who has been chosen health officer of Detroit, is well known as a sanitarian *by his works*, and not by the mere possession of an M. D., which is held by many as a special qualification, and this in the face of the fact that of eighty-six medical schools in the United States, less than a dozen of them make any pretensions whatever to teach State medicine. The M. D. candidates of Detroit for the position, were no doubt as well qualified for the office as most M. D.'s who have never paid any attention to the subject. But Dr. Wight is one of a small number of physicians throughout the country who have specially devoted themselves to the study of preventive medicine for the love of it, and of the still smaller number who have earned such a reputation in its practice as to render their services of recognized value. The Board of Health of Detroit have done themselves and the city they represent honor in the selection of Dr. Wight:—they can well afford to respect his sanitary knowledge and support him in its exercise.

The Recent "Sanitary Exhibition," under the direction of the New Jersey State Board of Health, at the State Fair, was rather disappointing. The only display of any consequence was by Professor Leeds, of the Stevens Institute. He had on exhibition over four hundred samples of foods and drugs he had analyzed, in bottles bearing labels, on each one of which was stated the results of the analysis. Of poisonous adulterations, one specimen only was shown—

in pickles. His display was satisfactory, in so far as it corresponded with the result of what has hitherto been shown in this country, that adulteration of foods is chiefly a commercial and not a sanitary problem. Of sanitary appliances, the only thing calculated to instruct the people was a plan of house plumbing, but this was defective, apparently for the want of better means of display. There were four or five water closets, none of them new or set with water supply, and therefore their advantages or otherwise were inappreciable by the visitors. A model of an excavating apparatus, with plan for consuming escaping gas by combustion, was also on exhibition, but this, like the closets, was lacking in position and means for proper display. The effort of the State Board of Health in this direction is a very praiseworthy one, eminently deserving the patronage of manufacturers and proprietors of sanitary appliances and goods, and we sincerely trust the persistent effort of the Board will eventually meet with the success it so well merits.

Efficient Means of Abating Nuisances.—The Board of Health of Flatbush, L. I., have adopted the novel plan of publishing the names of persons found guilty of maintaining nuisances, and the limitations of time given them for abatement under penalty of the law. It is said to be efficient, though the cause of loud complaint by those who are thus overtaken in the process of retailing poison to their neighbors.

Small-Pox Ravages in Chicago.—Of 1,359 cases of small-pox here since January 1, 40 per cent. have proved fatal. It is noteworthy that by far the greater number of cases have occurred in the Fourteenth Ward, where the more degraded portion of the foreign element lives, and where attempts at vaccination have been met by open violence at times. In that ward there are 40,000 persons who have not been vaccinated, and of the 108 deaths here in September, 81 were in that division of the city. It is believed that the publication of these facts will create such a sentiment as will result in almost universal vaccination, and in increased diligence in the matter of cleaning the streets.

An Abstract of the Papers on State Medicine, before the International Congress, besides those in full published in this number, and those which we intend to publish hereafter, is unavoidably crowded over to next number.

AMERICAN PUBLIC HEALTH ASSOCIATION will convene in Savannah, November 29th instant.

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending September 24, 1881. **Abbreviations:** c, consumption; a l d, acute lung diseases; s f, scarlet fever; ms, measles; w c, whooping cough; d-c, diphtheria and croup; t f, typhoid and typhus fevers; s p, small pox; y f, yellow fever; ch, cholera; dl d, diarrhœal diseases; ml f, malarial fever; c d, contagious diseases.

Atlanta, Ga., 37,421: 23; 10; 31.6.—t f, 3.
Baltimore, Md., 332,190: 156; 76; 24.4.—c, 22; d-c, 18; t f, 8.
Boston, Mass., 362,535: 197; 78; 28.3.—c, 28; d-c, 14; dl d, 31; t f, 14.
Brooklyn, N. Y., 566,689: 319; 61; 28.4.—c, 44; d-c, 31; dl d, 45.
Buffalo, N. Y., 155,137: 107; 50; 36.0.—dl d, 38; d c, 4.
Cambridge, Mass., 52,800: 18; 8; 17.7.—
Camden, N. J., 41,658: 20; 8; 25.0.—
Charleston, S. C., 49,990: 41; 28; 45.9.—c, 7.
Chicago, Ill., 503,304: 284; 133; 29.5.—s p, 26; t f, 29; d c, 27; dl d, 27.
Cincinnati, O., 255,708: 93; 41; 18.2.—t f, 7.
Cleveland, O., 160,140: 71; —; 23.1.—t f, 7; dl d, 20.
Dayton, O., 38,677: 14; 7; 18.8.—
Dis. Columbia, 180,000: 90; 39; 26.0.—ml f, 8; t f, 5.
Evansville, Ind., 29,280: 14; 9; 18.9.—
Fall River, Mass., 49,000: 25; 15; 26.6.—
Hudson Co., N. J., 187,950: 106; 45; 29.4—s p, 2; ml f, 3.
Indianapolis, Ind., 75,074: 31; 16; 21.5.—
Kansas City, Mo., 60,000:
Lawrence, Mass., 39,178: 10; 1; 13.3.—
Louisville, Ky., 123,625: 45; 21; 19.0.—
Lowell, Mass., 59,485: 21; 7; 18.4.—
Lynn, Mass., 38,284: 19; —; 25.9.—
Memphis, Tenn., 33,593: 36; 14; 55.8.—c, 9; ml f, 6; dl d, 6.
Milwaukee, 115,578: 59; 41; 26.7.—dl d, 14; c, 7.
Mobile, Ala., 31,205: 20; 2; 33.4.—
Nashville, 43,461: 20; 8; 24.0.—
Newark, N. J., 136,400:
New Haven, Conn., 62,882: 23; 9; 19.1.—
New Orleans, La., 216,140: 99; 22; 23.8.—ml f, 12.
New York, 1,206,577: 705; 370; 30.5.—s p, 1; t f, 18; s f, 23; d-c, 52.
Omaha, Neb., 30,518: 10; 6; 17.1.—
Philadelphia, Pa., 846,980: 340; 147; 20.9.—s p, 12; t f, 12; dl d, 24.
Pittsburg, Pa., 156,381: 101; 44; 33.8.—t f, 11; s p, 16.
Portland, Me., 33,810: 14; 6; 21.6.—
Providence, R. I., 104,852: 36; 15; 17.9—
Richmond, Va., 63,803: 33; 15; 27.0.—s p, 1.
Rochester, N. Y., 89,363: 32; 9; 18.7.—
Saint Paul, Minn., 41,498: mo. Aug.: 155; 96; 43.9.—d-c, 17; dl d, 59
San Francisco, Cal., 233,956: 74; 21; 16.4.—s p, 2.
Savannah, Ga., 30,681: 15; 3; 25.5.—
Springfield, Mass., 33,340: 8; 7; 12.5.—
St. Louis, Mo., 350,522: 153; 60; 22.8.—ml f, 24; dl d, 13; d-c, 7.
Utica, N. Y., 33,913: 7; 3; 10.8.—
Wilmington, Del., 42,499: 20; 10; 24.5.—
Worcester, Mass., 58,295:

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at latest weekly returns received.

Alexandria, Egypt, 212,034, Sept. 10, 191; 46.8.—t f, 9.
Amsterdam, Holland, 326,203, Sept. 17, 133; 21.2.—t f, 5.
Antwerp, Belgium, 179,034, Sept. 3, 78; 22.7.—
Barcelona, Spain, 260,000, Sept. 3, 120; 24.7.—
Belfast, Ireland, 207,671, Sept. 24, 79; 19.8.—
Berlin, Germany, 1,123,577, Sept. 17, 484; 22.4.—t f, 17.
Birmingham, England, 402,296, Sept. 24, 117; 15.2.—
Bombay, India, 644,535, Aug. 20, 476; 38.5.—ch, 22.
Bremen, Germany, 114,000, Sept. 3,51; 23.3.—
Breslau, Germany, 273,000, Sept 3, 171; 32.7.—t f, 5.
Bristol and Clifton, England, 217,185, Sept. 24, 61; 15.4.—
Brussels, Belgium, 165,366, Sept. 24, 71; 22.3.—
Bucharest, Roumania, 200,000, Sept. 10, 91; 23.3.—
Buda-Pesth, Hungary, 370,370, Sept. 17, 219; 31.3.—s p, 4; t f, 5.
Calcutta, India, 429,535, Aug. 13, 212; 25.7.—ch, 10; t f, 8.
Christiania, Norway, 120,000, Sept. 3, 29; 12.6.—
Copenhagen, Denmark, 235,254, Aug. 27, 74; 16.4.—
Dresden, Saxony, 220,216, Sept. 17, 76; 17.9.—
Dublin, Ireland, 348,525, Sept. 24, 149; 22.2.—t f, 4.
Edinburgh, 229,030, Sept. 24, 88; 20.0.—
Genoa, Italy, 180,625, mo. of May, 399; 26.5.—
Glasgow, Scotland, 512,034, Sept. 24, 191; 19.4.—
Havana, Cuba, 195,437, Sept. 17, 158; 42.2.—y f, 25; s p, 1; t f, 3.
Lisbon, Portugal, 203,681, Aug. 20, 117; 29.9.—s p, 2.
Liverpool, England, 553,988, Sept. 24, 246; 23.3.—t f, 11; s f, 10.
London, 3,829,751, Sept. 24, 1,279; 17.4.—s p, 26; t f, 43.
Lyons, France, 342,815, Sept. 17, 174; 26.4.—t f, 18.
Madras, India, 397,552: June 24, 259; 33.8.—s p, 30; *fevers*, 59.
Malaga, Spain, 115,882, Sept. 18, 88; 39.5.—
Montreal, Canada, 140,000: July 30, 92; 34.9.—t f, 2.
Munich, Germany, 230,000, Sept. 17, 148; 33.5.—
Paris, France, 1,988,806, Sept. 22, 947; 24.8.—s p, 15; t f, 29.
Rio de Janeiro, Brazil, 335,000, Aug. 27, 188; 29.7.—s p, 2.
Rome, Italy, 305,469, July 30, 171; 20.3.—
Stockholm, Sweden, 169,429, Sept. 17, 51; 15.8.—
St. Petersburg, Rus., 669,741, Sept. 17, 498; 38.7.—t f, 55; s p, 5.
Trieste, Austria, 128,295, Aug. 20, 98; 36.2.—
Turin, Italy, 236,658, Aug. 27, 143; 30.9.—t f, 15.
Venice, Italy, 141,615, July 30, 78; 28.4.—
Vienna, Austria, 731,191, Sept. 17, 199; 21.3.—s p, 13; t f, 5.
Warsaw, Rus. Poland, 357,169, Sept. 3, 314; 43.2.—s p, 9.

The six healthiest cities in the United States, as measured by the above and most recent authentic reports, up to the time of going to press with this number, were, in the order named:

UTICA, SPRINGFIELD, LAWRENCE, OMAHA, PROVIDENCE and CAMBRIDGE.

The Six Unhealthiest were:

MEMPHIS, CHARLESTON, ST. PAUL, BUFFALO, PITTSBURG and MOBILE.

The Six Unhealthiest in the World were:

MEMPHIS, ALEXANDRIA, CHARLESTON, ST. PAUL, WARSAW and HAVANA.

Literature.

The Sanitary Care and Treatment of Children and their Diseases is second to no subject which can engage the attention of the medical practitioner, the parent or the public; and it is very doubtful whether any book hitherto published on these subjects comprehends more thorough practical knowledge, carefulness of preparation and clearness of elucidation, or better merits the confidence of the medical profession and a wide circulation than this.* And all the more, as the first practical outcome of the magnificent charity of the late Thomas Wilson, of Baltimore—"THE THOMAS WILSON SANITARIUM FOR CHILDREN OF BALTIMORE CITY."

In a brief introduction to the work by the trustees, we are informed that, at their first meeting preliminary to the formation of any definite plan of procedure, they determined:—

"To correspond with a few persons at home and abroad, who are eminent for their experience and success in the treatment and care of sick children, and to obtain essays from them, to be published for the benefit of this and similar institutions."

The work before us is the issue. The authors of these essays are so well known as being among the foremost in their knowledge of the sanitary care and treatment of children and their diseases as to need no introduction to the reader. The separate titles are: *How can Children in a City be Kept Healthy?* by Dr. Garrett-Anderson, of London; *The Mortality of Young Children; Its Causes and Prevention*, by Dr. Busey, of Washington; *The Improvement of the Condition of Poor and Sick Children*, by Dr. Jacobi, of New York; *Observations upon the Sanitary Care and Treatment of Children and their Diseases*, by Dr. Meigs, of Philadelphia; and *Causes of the Great Mortality of Young Children in Cities During the Summer Season, and the Hygienic Measures Required for Prevention*, by Dr. J. Lewis Smith, of New York. The difference in titles simply serves to show the special trend of each writer's mind under the same general subject of consideration—the different views of the same object, from different standpoints; by which means, it is hardly necessary to add, the

*The Sanitary Care and Treatment of Children and their Diseases. Being a series of five essays, by Drs. Elizabeth Garrett-Anderson, Samuel C. Busey, A. Jacobi, J. Forsyth Meigs and J. Lewis Smith. Prepared by request of the trustees of the Thomas Wilson Sanitarium, of Baltimore, Md. Boston: Houghton, Mifflin & Co. The Riverside Press, Cambridge, 1881. 8vo., pp. 309. Price, $2.50.

whole subject is displayed with a clearness and practical utility altogether unattainable by any single-handed effort.

The work is illustrated with diagrams of the SANITARIUM, and gotten up in the excellent style common to the publishers.

Histology has for many years been considered an indispensable branch of medicine, yet, it seems, never adapted to the conditions suitable for a student's text-book. *One now before us is designed to fulfill these conditions: On the one hand, avoiding the too brief and incomplete manuals, and on the other the too elaborate and diffuse treatises hitherto published on the subject. The editor of the work is well known in New York as a profound student, and his associates will be recognized as among the most industrious collaborators of this branch of study in this country. The subject is well arranged and profusely illustrated. The mechanical execution of the work is in all respects excellent.

The Atlanta Medical Register, with October number, supersedes the Atlanta *Medical and Surgical Journal,* and under the new editors, Drs. Jno. Thad. Johnson and James B. Baird, promises renewed zeal and absolute independence. The brief editorial announcing the change partakes of the spirit of the giant strides of Georgia's capital city, with which it promises to keep up; and to do this is to be in the vanguard of the cause to which it is devoted—"the promotion of the truth, upholding the right and cementing the ties of professional brotherhood."

The Wilderness Cure, by Marc Cook, author of Camp Lou, in *Harper's Magazine* for May, recently published by William Wood & Co., New York, is a very entertaining little volume from the lay standpoint, but useful to physicians as well as laymen, for the clearness with which it shows the good effects of preventive medicine: of a pure, dry atmosphere, wholesome food and out-door exercise—even in the coldest climates—when well clad, as a means of preventing or arresting the progress of pulmonary consumption. The more of such books, and the more generally they are read by both the sick and the well, the better for the health of mankind.

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*A Manual of Histology. Edited and prepared by Thomas E. Satterthwaite. M.D., of New York, President of the New York Pathological Society, Pathologist to St. Luke's and Presbyterian Hospitals, etc. In association with Drs. Thos. Dwight, J. C. Warren, W. F. Whitney, C. J. Blake, and C. H. Williams, of Boston; J. Henry Simes, of Philadelphia; B. F. Westbrook, of Brooklyn; E. C. Wendt, Abraham Mayer, R. W. Amidon, A. R. Robinson, W. R. Birdsall, D. B. Delavan, C. L. Dana, and W. H. Porter, of New York. 8vo., pp. 492, with 198 illustrations. New York: William Wood & Co.

Typhoid Fever at Rugby.—The *Cincinnati Commercial* of August 16 publishes a melancholy result of the criminal negligence of the managers of the English colony at Rugby. In a population of about 400 there had been, up to and within a few weeks of that time, about twenty cases of typhoid fever and several deaths. Among the victims then ill was a young lady, daughter of Mr. Hastings Hughes, and a child of Mr. Richard Mitchell, of Cincinnati. The cause was discovered to be the use of drinking-water from a well, twelve or fifteen feet from a foul cistern, so poisoned by decomposing animal and vegetable matter as to have sickened the workmen engaged in cleaning it, "and it is believed that at this time (of cleansing) the cistern may have become the receptacle of the dejections from the first case of the disease."

Indigestion and Biliousness is one of the most timely and useful books recently published.* Timely, less in the sense of any scarcity of literature on the subjects of which it treats, than in their masterly grasp and rescue from obscure or superficial treatment at other hands; insomuch, indeed, that a master was required in this sphere as well as that of the chemistry and physiology of digestion, and equally, too, in the arrangement and style of treatment. In all which accomplishments, the author has shown rare skill. Herein is brought face to face the popular and indefinite notions of indigestion and biliousness, and the most exact certainties of modern science, in the light of which biliousness is given its true significance. The preparation of food, the different degrees of digestibility of different kinds, the relations of the bile to the albuminoids, the relations of digestion to habits of life, methods of living and healthful nutrition, are all discussed with remarkable precision and perspicuity. The work is full of sound practical knowledge, necessary to every medical practitioner.

Ewald's Lectures on Digestion,† is a good companion book to the preceding. It comprehends an account of the experi-

* Indigestion, Biliousness and Gout in its protean aspects. Part 1. Indigestion and Biliousness, by I. Milner Fothergill, M. D., Member of the Royal Coll. of Physicians of London, Senior Assist. Physician to the City of London Hospital for Diseases of the Chest, etc., etc. 12mo, p. 320. New York: William Wood & Co.

† Lectures on Digestion: An introduction to the Clinical study of Diseases of the Digestive Organs. Twelve lectures delivered to practitioners and advanced students of medicine during the winter session 1878-9, by Dr. C. A. Ewald, Lecturer in the Royal University of Berlin, formerly principal assistant in Professor French's Clinic at the Charity Hospital, Berlin. Translated by Robert Saundly, M. D., Edin., Member of Royal Coll. of Physicians, etc., etc. 12mo, pp. 161. New York: William Wood & Co.

mental work, by which our knowledge of digestion has been greatly advanced in late years, together with the pathology of indigestion as recognized by the investigations of the clinical teacher. It is an admirable summary of all that is certainly known on the subject of which it treats—a safe and excellent guide to the general practitioner, a valuable reference book, containing at the end of each lecture the bibliography of the subject discussed.

The Private Care of the Insane, by Ralph L. Parsons, M. D., of Greenmont-on-the-Hudson, near Sing Sing, N. Y. (reprint from *The Alienist and Neurologist*, St. Louis, October, 1881), is an excellent practical paper, by one whose long and successful experience in the treatment of the insane should command the attention of all alienists, and of all persons interested in the best care of the insane.

The International Review for November contains six solid papers: Part II. of August Lange's paper on Victor Hugo; Rev. Dr. Boggs' concluding paper, reviewing Mr. Atkinson's on "The Solid South;" The Plays of M. Octave Feuillet, by J. Brander Matthews; The Punishability of the Insane, by Dr. Wm. A. Hammond; Our Exports of Breadstuffs, by Richard H. Edmonds, and An Acadian Governor, by James Grant Wilson. A. S. Barnes & Co., New York.

The Atlantic Monthly for November contains a Continuation of Dr. Breen's Practice—W. D. Howells; Among Lowell Mill Girls—a reminiscence—Lucy Larcom; When Did the Pilgrim Fathers Land at Plymouth?—S. H. Gay; The Portrait of a Lady, L-LII—Henry James, Jr.; Romance of Modern Life; So as by Fire—W. O. Stoddard; The Theory of a Common Origin for All Languages—John Fiske; From a Mournful Villager—Sarah Orne Jewett; A Florentine Family in the Fifteenth Century—E. D. R. Bianciardi; The Forestry Work of the Tenth Century—Sylvester Baxter; Goethe's Limitations as Man and Poet; Running Water Notes; The Roman Poets of the Republic; Garfield; The Contributor's Club, and Books of the Month. Houghton, Mifflin & Co., Boston.

Harper's Monthly for October is profusely illustrated. Its leading papers are: "A Berkshire Road," "Journalistic London," "The Peabody Museum of Archæology and Ethnology," "Adirondack Days," "Frederick A. Bridgman," "The Telegraph of To-day," "Cotton and Its Kingdom," "Anne" (a serial), "Raldy" (a story), "The Mormon Situation," "Faint Heart Ne'er Won Fair Lady" (a story), "A Laodician" (a serial), and the usual departments. **November Number,** received just as we go to press—is a number of rare excellence, concluding the sixty-third volume.

SANITARY MISCELLANY.

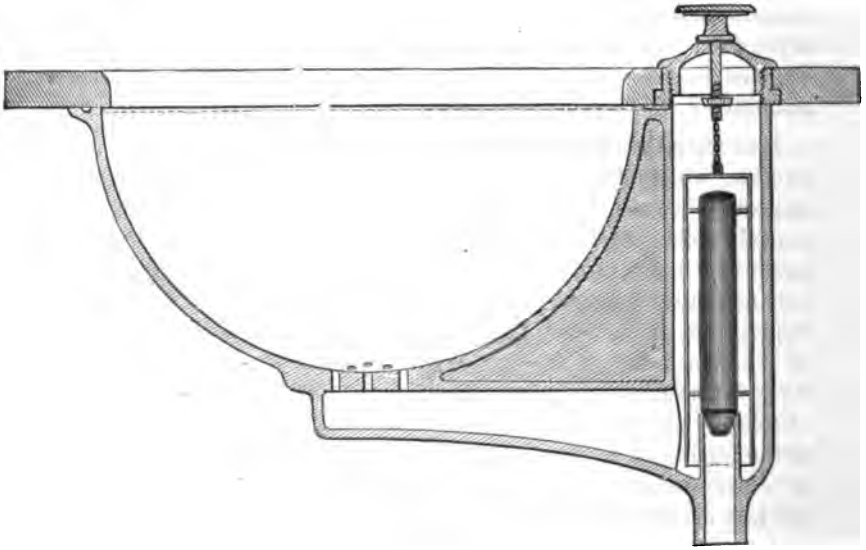
Ferro-Phosphorated Elixir of Calisaya Bark, an elegant combination of the Phosphate of Iron and Calisaya, by which the nauseous inkiness of the Iron and astringency of the Bark are wholly overcome without any impairment of their active tonic properties. It is a most efficient tonic, pleasant to the taste and acceptable to the most delicate stomach. Of the *Cod-Liver Oil* manufactured on the seashore by the same house, it is scarcely necessary to say more than that it is one of the best tested for absolute purity, and most highly approved brands known to the medical profession. Professor Hayes, State Assayer of Massachusetts, after an exhaustive analysis, says of it: "It is the best for foreign or domestic use." And Dr. Willard Parker: "I have tried almost every other manufacturer's oil, and give it the decided preference."

Horsford's Acid Phosphate.—Phosphorus, in one form or another, is essential to human health. It is an ingredient of all the important tissues and liquids of the body, and consequently an indispensable element of food and of healthy blood. It is, most of all, essential to the nervous tissues. Therefore, if from any unusual nervous exhaustion by excesses, by over-work, nervous strain or labor, or by deprivation in the food, phosphorus becomes among the most useful of medicines, and its *mode of preparation* specially important; as, from its well known potency and irritating properties in its pure state, it is absolutely necessary that these qualities should be overcome. This is the quality of Professor Horsford's acid phosphate. It possesses, in a rare degree, all the best properties of phosphorus, and is frequently acceptable to the stomach when other forms disagree.

Borax Soap we have before had occasion to commend as one of the best soaps made, for the laundry and all other purposes. Manufactured of pure tallow and borax with a little ammonia as alkali, instead of potash or soda, it possesses superior cleansing qualities, while it is wholly free from irritating properties, and entirely does away with the annoying demands of the laundry and kitchen for the miscellaneous use of kitchen soda and ammonia, in addition to other soaps. It is manufactured in all the usual varieties for the laundry, nursery and toilet by Thomas Gill, 14 Park Place, New York.

Lactopeptine.—That manufactured by the New York Pharmacal Association has won its way to such general favor on account of its well-proven remedial properties, and is so thoroughly indorsed by many of the most distinguished medical practitioners throughout the country, as to need nothing more than this invitation of attention to the advertisement on another page of this number.

Ingluvin.—The "pepsin" obtained from the gizzard of the domestic fowl is a new remedy, said, by some who have used it, to be superior to the pepsin of the hog's stomach, now in common use for almost every variety of indigestion. Dr. A. F. Shelly, of Philadelphia, after having used it for several years, regards it as a specific for the nausea and vomiting of pregnancy; the most powerful and reliable remedy for the cure of indigestion, dyspepsia, and sick stomach caused by the debility of that organ, and useful in all cases where pepsins and pancreatines are used, but with much more certainty of good results. It is manufactured by the celebrated house of William R. Warner & Co., Philadelphia.



The "Sanitary Valve Wash Basin Trap" represented in section by the above cut, is an effectual device for cutting off the escape of sewer gas through the wash basin. The plunger is hollow, and moves in a chamber in open communication with the basin, so that when the water rises to a certain height in the bowl, the plunger is floated from its seat and allows the water to escape from below. The lower edge of the plunger dips into a channel made around the top of the waste pipe, and forms a bell-trap; so that when the valve is raised there is still left an effectual seal against the escape of sewer gas. With a ventilating tube communicating with the waste-pipe near the outlet of the bowl leading to the open air, the seal may be considered complete and perfect.

It is manufactured by Thomas Murdock, 273 Pearl St., New York.

THE SANITARIAN.

A MONTHLY MAGAZINE.

Vol. IX. DECEMBER, 1881. No. 105.

THE PROGRESS OF SANITARY PROTECTION AT NEWPORT, R. I.*

No. V.—Proceedings of the Sanitary Protection Association: Public Criticism; Defective House Drainage, and Measures taken for its Improvement; The Cost of Unsanitary Conditions; Diphtheria and Dirt; the Importance of House Inspections, etc.

By Dr. Horatio R. Storer.

(*Continued from p.* 503.)

At the same meeting, Dr. Storer remarked that since the request had been publicly made in the Newport *Mercury*, that he should verify late statements of his own concerning the sanitary condition of Newport, in a court of law, he had consulted Mr. Sheffield with regard to the best means of doing so; it being his desire that members of the city government, real estate agents, newspaper correspondents, the inspecting engineer of the Association, physicians, and property owners and lessees, might have the opportunity to testify, upon oath, as to their own personal knowledge, and perhaps personal behavior as well, in this matter. He instanced, as in point, the condition of a public market upon Thames St., between Washington Square and Marlborough St., the cellar of which was filled from a neighboring cesspool, where the tenant had found it impossible to obtain relief from the landlord or from city officials. In this case, Dr. Storer had seen within a week, sewage matter pumped for several hours directly into the street, and allowed to remain perhaps even to the present moment, upon the pavement; thus causing the most dangerous form possible of public nuisance.

Mrs. Tilton corroborated these remarks by describing the foul condition of two boarding houses in which she had resided since coming to Newport. While during the day, after opening both doors and

* Prepared at the request of the Rhode Island State Board of Health.

windows, the atmosphere would seem tolerably good, the moment the houses were closed at night the odor would become unmistakable and insufferable.

Prof. Pumpelly inquired whether the city, by its inaction and neglect to avail itself of the Enabling Act of the Assembly, had not rendered itself liable in law. In case of resultant illness in the family of any member of the Association, he should recommend individual and concerted action upon the part of the Association to test the point by a suit for damages.

Dr. Storer read a letter from the Secretary of the State Board of Health of Minnesota, requesting copies of all the publications of the Association, both for the Library of the Board and for general distribution. The request had been complied with. He announced the receipt of the 27th Registration Report (for 1879) from the State Board of Health of Rhode Island, and exhibited a copy of the recently published work of Mr. E. S. Philbrick (a summer resident of Newport), upon "American Sanitary Engineering." He supposed that this was the best manual for those who were not professional experts that had yet been issued, and it was the more interesting to ourselves from containing much of practical bearing in connection with Col. Waring's new system of sewerage—a system which, with certain modifications of his own, Mr. Philbrick seemed to think available for Newport.

Dr. Storer also read extracts from a letter from Mr. Powel, the President of the Association, narrating late personal experiences of his own in Philadelphia, from house-poisoning, and animadverting strongly upon the method of constructing sewers now practiced in that city.

Rev. Dr. Child asked Dr. Rankin whether a scarlet fever or "foul" ward had been provided at the Newport Hospital.

Dr. Rankin replied that there were no funds for the purpose.

Mrs. Lieber inquired what sanitary dangers there were in Newport that did not exist elsewhere.

Dr. Storer answered that there was an unusual proportion of houses here that were occupied but a portion of the year, and therefore the more liable to all sorts of defects in plumbing and drainage.

Mr. Davis desired to know if, theory aside, there had ever occurred any serious sickness from those causes among the summer visitors.

Dr. Rankin stated that he had seen several such cases that could not be otherwise explained, and Dr. Child was convinced that there had been a great many such.

Mrs. Tilton thought that one could not live safely in Newport in a house not one's own, unless constantly alert against unexpected dangers.

Dr. Child was sure of this, and that only the natural healthfulness of its surroundings saved Newport from results that would otherwise, in the present condition of things, be inevitable.

Mr. Mason pointed out that it was not only defects in drains that produced foul air in dwelling houses when closed at night. Many houses in Newport, even of those of the better class built for summer occupancy, had no cellars—and air from the ground, which was often wet or filthy, ascended directly into the house, in default of proper

ventilation. This was of course worse at night, when doors and windows were closed. He excused plumbers and other mechanics from much of the blame laid upon them. The real fault was with the owners. However faithful the workmen, they of themselves can do nothing where all the service, soil pipes as well, is of lead, liable to become honeycombed, as is at present the case with almost every house in Newport of the better class that was built so long as twenty years ago.

Dr. Child said that such houses should be libeled as unfit for occupancy. Abundant reasons had been given for a general inspection of the houses of the city, whether the owners wish it, or no.

Prof. Pumpelly was the more convinced of the importance of carefully preserving, upon file, the records of examinations made for the Association by its Inspecting Engineer. It seemed to him that this register should be kept open by the Secretary for all members of the Association to consult at their need. This would afford additional inducement for proposing buyers or lessees to become members, as they would find it to their interest to advise with the Secretary before seeing real estate agents. Each year would add to the number of such estates upon the Association's record. Of course the Secretary would venture no opinion concerning houses that had not been examined for the Association by its Inspecting Engineer.

Mrs. Tilton warmly approved the measure suggested.

Dr. Brackett thought that it would also be well that a cautionary advertisement of similar tenor should be sent to the leading New York and Boston newspapers.

Mr. Mason feared there were difficulties in the way of reaching strangers. He had found such formerly in the case of insurance agents. Proposing tenants should obtain certificates of the good condition of houses from the landlords.

Dr. Child asked how it could be made known that certificates ought always to be insisted upon.

Mr. Mason replied that the only possible way was by agitation, by notifying the public that the Association stood ready to provide the proper examination, either for landlords or tenants.

Mr. Seymour considered that this could only be done by advertising.

Dr. Child inquired if it were to be supposed that every real estate agent would hang such an advertisement in his office.

Messrs. Mason, Davis, and Pumpelly exclaimed, "certainly not."

Dr. Storer explained, in response to an inquiry, that the charter of the Association protected its members from any legal annoyance, provided all investigations were made in strict accordance with the object of the Association, namely, the protection of its members. An instance had already occurred which had settled this point.

Dr. Rankin advised the sending a circular in accordance with Prof. Pumpelly's suggestion, to each of the regular summer lessees. The list could be gathered from the real estate agents.

Mr. Davis said there would be no difficulty in obtaining this list.

Prof. Pumpelly hoped that it would be done at once.

Dr. Rankin moved, Mr. Davis seconded, and the Council voted, to send the circular. Dr. Child, Mr. Davis, and Dr. Rankin were ap-

pointed a committee to attend to the matter, the affair of advertising being also left to their discretion.

Mrs. Bigelow hoped that immediate steps would be taken towards deciding the ice question. She did not like the prospect of being without ice the coming summer.

Mr. Davis desired that the committee would consider whether the ice, if condemned for household purposes, should be allowed to be used in markets.

The Chairman requested the committee to report without fail at the next meeting, and expressed a wish that members generally would attend. He was, besides, desirous that the Council should take some action, if possible, towards obtaining the appointment of the separate Board of Health. He did not think it seemly that the Association, or any of its members, should again be permitted to be so publicly spoken of with disrespect.

Dr. Storer reminded Dr. Child that it was in one of these attacks that the first public testimony had been given to the existence and the work of the Sanitary Protection Association. It was there stated as an argument against a Board of Health, that the Association was of itself accomplishing so much for the health of the city.

Mr. Davis thought that no measures towards influencing the city government, of an effective character, could be taken by the Council, save as individuals.

The Chairman advised, however, that the subject should again be discussed at the next meeting.

The following is the circular letter that was directed at the meeting of March 8th, to be issued to house owners and lessees in Newport:

"CIRCULAR LETTER, No. 1.—The sanitary condition of houses and cities has been, for the past few years, occupying the attention of physicians, sanitarians, and scientific minds throughout the civilized world to such an extent, that all intelligent men are now keenly alive to the importance of proper sanitary surroundings, and especially the sanitary condition of their own individual habitations. The questions now arise in the minds of every one, whether they are occupying houses of their own, or hired houses, or are about to seek a new house:—

(*a*) Are the sanitary surroundings of the house perfect? Do the trees and shrubbery permit sufficient exposure of it to the sun?

(*b*) Is the water pure and drinkable? If from a well or cistern, has it connection with the external air?

(*c*) Is the cellar dry, well ventilated, and free from decomposing matter which may give forth seeds of sickness and death, and has it a drain? This drain must be wholly unconnected with any sewer.

(*d*) Is the cellar air entirely excluded from the air supply of the furnace?

(*e*) Has every bed chamber free ventilation and direct means of communication with the external air?

(*f*) If contagious or infectious disease has occurred in the house, have the sick chamber, etc. (bedding, wearing apparel, curtains, carpet and upholstered furniture), been thoroughly disinfected, and the wall paper removed?

(*g*) Has each water closet means of external ventilation, and not into an entry or bed chamber?

(*g*—subsequently added) Is provision made for ventilation of the interior of the water closet by a current of air flowing through it, and above the trap, to a ventilating pipe or flue, extending above the house top, and independent of the soil pipe or its extension?

(*h*) Are the soil pipes in a sound condition and easily accessible for examination? Are they of iron, with lead plugged joints (the only true condition for a properly constructed soil pipe), or are they of lead? and if of lead have they been in the house for a number of years, and thus perforated with holes through which sewer gas escapes into the house?

(*i*) Has the soil pipe a proper vent through the roof?

(*j*) Is the soil pipe in its exit through the foundation of the house of iron or of earthen ware? If of the latter, is it broken off in or just outside of the foundation, so as to allow the sewage matter of the house to find its way throughout the foundation (a condition which is almost always found to exist where earthenware pipes are used)?

(*k*) If there are set bath tubs, basins or wash tubs, are they securely trapped? Is the kitchen sink safely trapped? It must not be forgotten that the ordinary bell trap does not perfectly exclude sewer gas, which its water absorbs and transmits, and that the S trap is liable to be "syphoned," or emptied by outward suction, so as to permit the escape of gas into the house from the soil pipe or drain.

(*l*) Is the waste water pipe of the refrigerator entirely cut off from all connection with the soil pipe?

(*m*) Is the cesspool near the foundation wall? is the cesspool a loose one? and is there any overflow, or leakage into the foundation, cistern or well?

If all these conditions are answered to the satisfaction of the sanitarian, then one may consider his home in a healthy condition, and the occupants of it free from all danger of contracting diphtheria or typhoid fever from it. It is the almost universal opinion of physicians that every case of diphtheria and typhoid fever is preventable, and that wherever a case occurs, there are some bad sanitary surroundings. Even where diphtheria, like scarlet fever, has originated from direct contagion, it is probable that exposure to unhealthy influences at home has predisposed the individual to contract the disease more easily, and it is certain that such conditions render both of these diseases more liable to become fatal. When these facts are substantiated, does it not behoove every one to see that his house is put in order? With a house in a perfect sanitary condition (which it is possible for every one to have), many deaths, and a vast amount of sickness and physical debility will be saved, and the period of life lengthened.

According to the census of 1870, over 100,000 lives were sacrificed, by preventable diseases, in the United States during that year, and over $100,000,000 lost thereby. Is it not our duty therefore to lend our assistance to diminish this unnecessary mortality and pecuniary waste?

A few of the citizens of Newport are awake to their duty, and in

1878 associated themselves together and formed a Sanitary Protection Association. The general outline and object of the Association, and the privileges of its members are:

1st. To provide its members, at a moderate cost, with such advice and supervision as shall insure the proper sanitary condition of their own dwellings.

2d. To enable members to procure practical advice, on moderate terms, as to the best means of remedying defects in houses of the poorer classes, in which they may be interested.

3d. To aid in improving the sanitary condition of the city.

Each member is entitled to the following privileges in respect of property within the municipality of Newport:

1. An immediate report by the Inspecting Engineer of the Association on the sanitary condition of one dwelling or property, with specific recommendations, if necessary, as to the improvement of drainage, water supply and ventilation, and a report upon the water by the analyst.

2. An annual inspection of his premises, with a report as to their sanitary condition.

3. Occasional supplementary inspection and advice concerning the dwelling or property in respect of which he is a subscriber.

4. Each member by his annual payment secures the above privilege in respect of one dwelling or property occupied or designated by him. Should he be interested in two or more dwellings or properties, as owner or occupant, he may secure equal privileges in respect to them all by paying the annual subscription for each.

5. A report, to be obtainable on payment of a special fee, on any dwelling or property, or plans thereof, which he may wish to hire or purchase.

6. Reports by the officers of the Association as to the sanitary condition of any dwellings or properties of the very poor, on payment of a moderate fee.

7. A report, without fee, upon the sanitary condition of any public building, as church, school-house, or place of public resort, within the city of Newport.

The Association, in reality a Mutual Insurance Company for the preservation of private and public health, is not intended as a substitute for municipal inspection, and will not conflict with the public authorities, but will supplement their action.

This mutual Sanitary Insurance Association desires to have every house in Newport in a perfect sanitary condition, and as its membership and inspection increase, there will be a corresponding increase of healthy houses in our midst. The Association will keep on file the record of every house inspected under its supervision, and these records will be open to all who join, thus enabling those in search of a house to know which houses have been inspected; a point of great practical utility to those seeking summer residences."

A special meeting was held on March 18th, in consequence of a letter addressed to the Council by Dr. John P. Curley, reporting the premises of one of his patients, who was ill with diphtheria, as in a bad sanitary condition, asking for an inspection of them, and recommending that a communication be sent to the Board of Aldermen, re-

questing them, in addition to placing a notice on the door, to enter upon the premises and direct such further measures to be taken as should be found necessary for the protection of the inmates and of the neighborhood.

This was the first case brought to the notice of the Association under the clause of the Constitution by which a report can be obtained as to the sanitary condition of any dwelling of the very poor, on payment of the fee of one dollar by the member requesting it. Dr. Curley described the premises as being in a very unsanitary condition, and the landlord as unwilling to do anything, even to the simple drawing off of the stagnant water which remained under and about the house. The tenant had appealed in vain to him, and now, through the agency of Dr. Curley, applied to the Association.

By motion of Dr. Storer, it was voted, that the Secretary shall, at once, in behalf of the Council, communicate with the Board of Aldermen, as a Board of Health, requesting them to enter upon the premises, and apply the necessary remedial measures, in accordance with the authority conferred upon them by Section 1 of Chapter 72, and Section 17 of Chapter 74, of the General Statutes of the State of Rhode Island, and by Sections 1, 5, 6 and 7 of an Act for "the maintenance and preservation of the Public Health in the City of Newport."

Dr. Storer then cited the case of Bailey's Market, where an appeal by the tenant to the Board of Aldermen, had, for two months past, been of no avail; the inflowing sewage from the adjoining premises, after passing under the floor of the market, had flooded the sidewalk and gutter of the street, and was gradually evaporated, to fill the nostrils and lungs of passers-by. The City Inspector of Nuisances had been communicated with in regard to the cause of the stench at that locality, and in his reply, stated that he found what has just been stated, and remarked that it was "very offensive." Mr. Bailey, in the presence of that official, had pumped into the street what was under his building, and had filled in with earth next to his foundation wall, but the space between that and the cesspool being but two feet, this was not a satisfactory remedy of the evil. At the present time, the space between the two premises is constantly flooded by the inflowing contents of the cesspool, and exposed to the view of the public.

A dwelling house situated on the corner of Washington and Bridge Streets, owned by the same person who keeps up this nuisance, has lately been visited by Mr. Burdick, who found that all the sewage of the house was conducted into the cellar without further means of disposing of it.

At the time of his visit, a girl of 14 years had just died of typhoid fever, a boy taken sick at Christmas was not yet able to be out; another of the children was dangerously ill, and the mother was in a very reduced state of health.

Near by, almost opposite, there has just been a case of diphtheria, and in the house to the east on Bridge Street, where there had lately been a death, there has been, on an average, two or three deaths a year, for the past four years, from scarlet fever, typhoid fever, diphtheria or croup.

Captain Cotton spoke of dwellings in Spruce Street and that vicinity. They have no basements and the slops are deposited in close contact with the house. The severity of the winter has caused the inmates to stuff up every crack and cranny by which fresh air may enter, while the damp foul air from the ground creeps in from beneath to mingle with the breathed-up air of the house.

In his own vicinity, on either side of him, there had been deaths from zymotic diseases, two of which had just occurred.

Dr. Curley mentioned having recently lost three cases by diphtheria, two of which were on Golden Hill Street.

Dr. Rankin also mentioned cases of a similar character.

It was voted, that Dr. David King, Chairman of the State Board of Health, be informed by the Secretary, on behalf of the Council, of what has been communicated to it this day by Drs. Curley and Rankin, and Captain Cotton and Mr. Burdick, with reference to certain unsanitary and infected premises within the city, with the request that inasmuch as it has been found impossible to obtain any relief, after repeated memorials to the Board of Aldermen, the only Health authorities as yet existing in Newport, the State Board of Health will at once investigate the condition of things referred to, and by virtue of its authority, take such measures as may prove necessary for the protection of the public health.

Upon April 12th, the report of the Inspecting Engineer upon the tenement infected with diphtheria, that had been brought into membership with the Association by Dr. Curley, was called for and read.

A letter from Dr. King, Chairman of the State Board of Health, dated March 31st, was read, stating that the memorial presented to the State Board by the Sanitary Protection Association, would be considered by the Board at their next meeting; also a letter from Dr. Fisher, Secretary of the State Board of Health, stating that the meeting of the Board had been held, before which Hon. S. P. Slocum, mayor of Newport, had appeared in relation to alleged neglect by the authorities of that city in the abatement of evident causes of sickness therein.

Dr. Storer stated that he had heard from several reputable sources a rumor that a bulletin was about to be published by the city authorities denouncing the Association, and accusing it of either ignorantly or maliciously exaggerating facts. He also had conversed with Dr. King, the Chairman of the State Board of Health, who remarked that Mayor Slocum had stated before the Board, that he had always attended to all proper complaints, and had removed or abated all evident nuisances, and that he (the Mayor) considered it a piece of impertinence for private citizens, or any society of citizens, to criticise or offer suggestions to the health authorities of the city in the performance of their duty.

Mr. Burdick had looked the matter up, and found that, in accordance with the Mayor's assertion at the State Board meeting, as reported in the Providence Journal, but two of the several cases of death by diphtheria had been reported at the City Clerk's office during the months of January, February and March; but he had also found that though but 65 returns of death had been made during the time

indicated, 80 burial permits had been granted by the Mayor. This gentleman had neglected his duty in not requiring all the death returns to be made, and some of them not yet made might have been of deaths from preventable diseases.

Dr. Storer, as Corresponding Secretary, had, upon behalf of the Council, written to Drs. King and Fisher, with reference to this matter, requesting their presence at next meeting. Very likely, however, nothing more would be done by them, as Dr. King had expressed himself as being satisfied with Mayor Slocum's explanation.

Undoubtedly the proceedings of the Board, with this satisfactory explanation of Mayor Slocum, would be entered in their minutes and published in their report, and it would not be proper to quietly seem to approve such action of the State Board in thus concluding the business after hearing but one side of the question.

As Dr. Fisher, the Secretary of the State Board, had expressed an intention to visit Newport, Capt. Cotton proposed that a committee be appointed to visit him, and state the case as known to the Association. It was suggested instead that the whole Council should meet the State Board, and that when it was discovered from Dr. Fisher what day would be agreeable, a special meeting of the Association should be called. Capt. Cotton made a motion conforming with this suggestion and it was so ordered.

Dr. Storer stated that we are constantly hearing on all sides of the remarkable healthfulness of Newport, the large number who live to die of old age, and of its freedom from sickness generally. He had made a study of the mortuary reports of Newport and Providence, for comparison, for the past four years, and had found that at present there was scarcely evidence of that absolute healthfulness of Newport, as ordinarily stated. In proof of this he submitted tables compiled from the registration reports of the State of Rhode Island.*

Prof. Pumpelly, chairman of the Almy's Pond Ice Committee, then read the report of that committee. It was very unfavorable.†

Prof. Pumpelly remarked that he had been visited by Mr. Brown, Superintendent of the Ice Company, on behalf of the Company, to ask what the Association was proposing to do in relation to the matter.

The Professor gave as his opinion to Mr. Brown, that with the people of Newport, it would make very little difference what report was given of the ice.

Mr. Brown begged to differ from him. He thought that Prof. Pumpelly underrated the intelligence of the people, and the company felt assured that it would affect them very seriously, should the ice be condemned by the Association; and especially would this be the case among the summer residents, who used an enormous amount of ice. Their business was a very large one, and that it might not be damaged, they were willing to co-operate with the Association as it might suggest; and should the water of the pond be condemned, go elsewhere for their ice another year.

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* THE SANITARIAN, Sept. 1881, p. 389.

† This report will hereafter, in view of its great general importance, be published separately, in full.

Mr. Brown also stated to him that the company had ice houses at both Almy's and Lily Pond, and stored the ice separately.

It was voted that the report be received, and that the ice company be requested to mark all their wagons according to the source from which the ice was cut—"Almy's Pond Ice," and "Lily Pond Ice," and never to put any other ice in the respective carts, and that they be advised of the substance of this report; the information to be given by Prof. Pumpelly to Mr. Brown, the Superintendent of the Company. Dr. Child suggested that so valuable a report as this should be given to the National Board of Health, as containing much valuable information, which would be of national interest. It was so voted.

Mr. Burdick thought that it would be better not to make the report public until after the conference with the Ice Company, and some arrangement had been made with them for certainty in the delivery of pure ice.

Captain Cotton suggested that, in justice to the Newport Ice Co., it would be only right to examine the ice supply cut by other companies. For instance, the ice from Easton's pond was cut from a very bad point, viz., just where the sewer from Kay Street enters the pond. Lily pond is singularly free from all contaminating influences, the surroundings being rocky, with no dwelling houses and but one stable near, which latter would be apt to be the case even were the ice to be cut from some lake in the back-woods of Maine.

The Secretary reported that the committee appointed for the purpose had again visited the Cliff Cottage Hotel and Mrs. Tilton's new house, and had made what suggestions were necessary for the plumbing and other sanitary arrangements.

Captain Judson reverted to the item in the report of the last regular meeting in relation to real estate agents, and stated that he, as one of that profession, would be willing to expose in his office a notice from the Association that a certificate of the sanitary condition of every house ought to be obtained from the Association before leasing such property. He had gone further, and, before he was a member of the Association, had recommended such to applicants for a summer residence.

The Secretary stated that a case had just happened in which a member of the Association, a lessee, had obtained a report of the condition of the premises before occupying the same. The owner, upon hearing of this fact, has written to his agent cautioning every one against interfering with his property, and disclaiming all responsibility in the matter—that is, if recommendation had been made and carried out, he would not be responsible for the payment thereof.

Captain Judson said that just at the first there might be slight feeling with some, but he anticipated no trouble in the future. He felt assured that owners would not object to the furnishing a certificate from the Association of the sanitary condition of their premises.

Dr. Storer moved as an amendment to the clause of the constitution by which the houses of the very poor may be examined by the payment of the sum of one dollar by the member requesting it, that in case of *immediate* need of inspection—as of infectious disease in

the house—the fee be remitted by the Association, for the reason that to prevent or arrest such sickness and contagion, the inspection was of a public character and for the public good.

The motion was seconded and passed.

It was voted that the payment made by Dr. Curley for the inspection of the infected premises he had reported to the Association be refunded to him by the Treasurer.

Captain Judson asked for the appointment of a committee to find out just what houses discharged their sewage into Kay Street sewer. He knew that many were already connected with it, and others were constantly tapping it. In course of time this would result very disastrously to the neighborhood of its discharge, that of the aqueduct pond.

The motion was made and passed, and the Chairman appointed Prof. Pumpelly, Capt. Cotton and Capt. Judson as the committee.

The Corresponding Secretary reported the receipt of a letter from the Secretary of the State Board of Health of Wisconsin, Dr. J. T. Reeve, asking for information in regard to the work accomplished by the Association, especially if it had moved the city authorities toward sanitary reform, and what progress had been made in that direction.

In reply, the facts in the case had been stated.

Similar letters to this, from other sources, had previously been communicated to the Association.

(*To be continued.*)

Deaths from Industrial Pursuits.—Some startling facts respecting the amount of sickness and death which result directly from the circumstances under which industrial pursuits are carried on have lately been brought to the attention of the authorities in England, as a subject worthy of investigation with a view to amelioration. One statistician who compiled tables on this subject in 1877, giving the records of deaths and injuries by steam boilers, in mines, on railways and in factories, estimated the mortality from these causes, during the four years preceding 1877, at a total of 107,000 men, women and children; and, on the basis of these facts, that 500,000 workmen will lose their lives during the 10 years from 1877 to 1886, from the following causes, namely: 300,000 in mines, 70,000 on railways and 130,000 in factories.—Another writer on the same subject thinks these estimates altogether too small, and that the accidents reported comprise only a small part of those that actually take place. He is of opinion that not less than 100,000 persons are annually killed in England from causes directly resulting from the industrial occupations in which they are engaged.

THE GERM THEORY.

An address delivered at the meeting of the International Medical Congress, by PROFESSOR PASTEUR.

GENTLEMEN: I had no intention of addressing this admirable Congress, which brings together the most eminent medical men of the world, and the great success which does so much credit to its principal organizer, Mr. MacCormac. The good will of your esteemed President has decided otherwise. How could one, in fact, resist the sympathetic words of that eminent man whose goodness of heart is associated in no small degree with great oratorical ability? Two motives have brought me to London. The first was to gain instruction, to profit by your learned discussions; and the second was to ascertain the place now occupied in medicine and surgery by the germ theory. Certainly I shall return to Paris well satisfied. During the last week I have learned much. I carry away with me the conviction that the English people are a great people, and as for the influence of the new doctrine, I have not only been struck by the progress it has made, but by its triumph. I should be guilty of ingratitude and of false modesty if I did not accept the welcome I have received among you in English society as a mark of homage paid to my labors during the past five and twenty years upon the nature of ferments—their life and their nutrition, their preparation in a pure state by the introduction of organisms (*ensemencement*) under natural and artificial conditions—labors which have established the principles and methods of microbie (microbism), if the expression is allowable. Your cordial welcome has revived within me the lively feeling of satisfaction I experienced when your great surgeon, Lister, declared that my publication in 1857 on milk fermentation had inspired him with his first ideas on his valuable surgical method. You have reawakened the pleasure I felt when your eminent physician, Dr. Davaine, declared that his labors upon charbon (splenic fever or malignant pustule) had been suggested by my studies on butyric fermentation and the vibrion which is characteristic of it. Gentlemen, I am happy to be able to thank you by bringing to your notice a new advance in the study of microbie as applied to the prevention of transmissible diseases—diseases which for the most part are fraught with the terrible consequences, both for man and domestic animals. The subject of my communication is vaccination in relation to chicken cholera and splenic fever, and a statement of the method by which we have arrived at these results—a method the fruitfulness of which inspires me with boundless anticipations. Before discussing the question of splenic fever vaccine, which is the most important, permit me to recall the results of my investigations of chicken cholera. It is through this inquiry that new and highly important principles have been introduced into science concerning the virous or contagious quality of transmissible diseases. More than once in what I am about to say I shall employ the expression virus-culture, as formerly, in my investigations on fermentation, I used the expressions, the culture of milk ferment, the culture of butyric vibrion, etc. Let us take, then, a fowl which is about to die of chicken cholera, and let us dip the end of a

delicate glass rod in the blood of the fowl with the usual precautions, upon which I will not here dwell. Let us then touch with this charged point some *bouillon de poule*, very clear, but first of all rendered sterile under a temperature of about 150° Centigrade, and under conditions in which neither the outer air nor the vases employed can introduce exterior germs—those germs which are in the air, or on the surface of all objects.

In a short time, if the culture vase is placed in a temperature of 25° to 30°, you will see the liquid become turbid, and full of tiny microbes, shaped like the figure 8, but often so small that under a high magnifying power they appear like points. Take from this vase a drop as small as you please, no more than can be carried on the point of a glass rod as sharp as a needle, and touch with this point a fresh quantity of sterilized *bouillon de poule* placed in a second vase, and the same phenomenon is produced. You deal in the same way with a third culture vase, with a fourth, and so on to a hundred, or even a thousand, and invariably within a few hours the culture becomes turbid and filled with the same minute organisms. At the end of two or three days' exposure to a temperature of about 30° C. the thickness of the liquid disappears, and a sediment is formed at the bottom of the vase. This signifies that the development of the minute organism has ceased—in other words, all the little points which caused the turbid appearance of the liquid have fallen to the bottom of the vase, and things will remain in this condition for a longer or shorter time, for months even, without undergoing any visible modification, inasmuch as we have taken care to exclude the germs of the atmosphere. A little stopper of cotton sifts the air which enters or issues from the vase through changes of temperature. Let us take one of our series of culture preparations—the hundredth or the thousandth, for instance—and compare it in respect to its virulence with the blood of a fowl which has died of cholera; in other words, let us inoculate under the skin ten fowls, for instance, each separately with a tiny drop of infectious blood, and ten others with a similar quantity of the liquid in which the deposit has first been shaken up. Strange to say, the latter ten fowls will die as quickly and with the same symptoms as the former ten; the blood of all will be found to contain after death the same minute infectious organisms. This equality, so to speak, in the virulence both of the culture preparation and of the blood is due to an apparently futile circumstance. I have made a hundred culture preparations—at least, I have understood that this was done—without leaving any considerable interval between the impregnations. Well, here we have the cause of the equality in the virulence. Let us now repeat exactly our successive cultures with this single difference, that we pass from one culture to that which follows it—from the hundredth to, say, the hundred and first, at intervals of a fortnight, a month, two months, three months, or ten months. If, now, we compare the virulence of the successive cultures, a great change will be observed. It will readily be seen from an inoculation of a series of ten fowls that the virulence of one culture differs from that of the blood and from that of a preceding culture when a sufficiently long interval elapses between the impregnation of one culture with the microbe of the preceding.

More than that, we may recognize by this mode of observation that it is possible to prepare cultures of varying degrees of virulence. One preparation will kill eight out of ten, another five out of ten, another one out of ten, another none at all, although the microbes may still be cultivated. In fact, what is no less strange, if you take each of these cultures of attenuated virulence as a point of departure in the preparation of successive cultures, and without appreciable interval in impregnation, the whole series of these cultures will reproduce the attenuated virulence of that which served as a starting point. Similarly, where the virulence is null it produces no effect.

How, then, it may be asked, are the effects of these attenuating virulences revealed in the fowl? They are revealed by local disorder, by morbid modifications more or less profound in a muscle, if it is a muscle which has been inoculated with the virus. The muscle is filled with microbes which are easily recognized because the attenuated microbes have almost the bulk, the form and the appearance of the most virulent microbes. But why is not the local disorder followed by death? For the moment let us answer by a statement of facts. They are these: the local disorder ceases of itself more or less speedily, the microbe is absorbed and digested, if one may say so, and little by little the muscle regains its normal condition. Then the disease has disappeared. When we inoculate with the microbe the virulence of which is null, there is not even local disorder; the *naturæ medicatrix* carries it off at once, and here, indeed, we see the influence of the resistance of life, since this microbe, the virulence of which is null, multiplies itself. A little further, and we touch the principle of vaccination.

When the fowls have been rendered sufficiently ill by the attenuated virus which the vital resistance has arrested in its development, they will, when inoculated with virulent virus, suffer no evil effects, or only effects of a passing character. In fact, they no longer die from the mortal virus, and for a time sufficiently long, which in some cases may exceed a year, chicken cholera cannot touch them, especially under the ordinary conditions of contagion which exist in fowl-houses. At this critical point of our manipulation—that is to say, in this interval of time which we have placed between two cultures, and which caused the attenuation—what occurs? I shall show you that in this interval the agent which intervenes is the oxygen of the air. Nothing more easily admits of proof. Let us produce a culture in a tube containing very little air, and close this tube with an enameler's lamp. The microbe in developing itself will speedily take all the oxygen of the tube and of the liquid, after which it will be quite free from contact with oxygen. In this case it does not appear that the microbe becomes appreciably attenuated, even after a great lapse of time. The oxygen of the air, then, would seem to be a possible modifying agent of the virulence of the microbe of chicken cholera—that is to say, it may modify more or less the facilities of its development in the body of animals. May we not be here in presence of a general law applicable to all kinds of virus? What benefits may not be the result? We may hope to discover in this way the vaccine of all virulent diseases, and what is more natural than to begin our investigations of the vaccine of what we in French call charbon, what

you in English call splenic fever, and what in Russia is known as the Siberian pest, and in Germany as the Milzbrand. In this new investigation I have had the assistance of two devoted young *savants*—MM. Chamberland and Roux. At the outset we were met by a difficulty. Among the inferior organisms, all do not resolve themselves into those corpuscle germs which I was the first to point out as one of the forms of their possible development. Many infectious microbes do not resolve themselves in their cultures into corpuscle germs. Such is equally the case with beer yeast, which we do not see develop itself usually in breweries, for instance, except by a sort of scissiparity. One cell makes two or more, which form themselves in wreaths; the cells become detached, and the process recommences. In these cells real germs are not seen. The microbe of chicken cholera and many others behave in this way, so much so that the culture of this microbe, although they may last for months without losing their power of fresh cultivation, perish finally like beer yeast which has exhausted all its elements. The anthracoid microbe in artificial cultures behaves very differently. In animals, as in culture, it is found in translucid filaments more or less segmented. This blood or these cultures freely exposed to air, instead of continuing according to first mode of generation, show at the end of forty-eight hours corpuscle germs distributed in series more or less regular along the filaments. All around these corpuscles matter is absorbed, as I have represented it in one of the plates of my work on the diseases of silkworms. Little by little all connection between them disappears, and presently they are reduced to nothing more than germ dust. If you make these corpuscles germinate, the new culture reproduces the virulence peculiar to the thready form which has produced these corpuscles, and the result is seen even after long exposure of these germs to contact with air. Recently we discovered them in the pits in which animals dead of splenic fever had been buried for twelve years, and their culture was as virulent as that from the blood of an animal recently dead. Here I regret extremely to be obliged to shorten my remarks. I should have had much pleasure in demonstrating that the anthracoid germs in the earth of pits in which animals have been buried are brought to the surface by earthworms, and that in this fact we may find the whole etiology of disease, inasmuch as the animals swallow these germs with their food. A great difficulty presents itself when we attempt to apply our method of attenuation by the oxygen of the air to the anthracoid microbes. The virulence establishing itself very quickly, often after four-and-twenty hours, in an anthracoid germ which escapes the action of the air, it was impossible to think of discovering the vaccine of splenic fever in conditions which had yielded that of chicken cholera.

But was there, after all, reason to be discouraged? Certainly not; in fact, if you observe closely, you will find that there is no real difference between the mode of generation of the anthracoid germ by scission and that of chicken cholera. We had reason to hope that we might overcome the difficulty which stopped us by endeavoring to prevent the anthracoid microbe from producing corpuscle germs and to keep it in this condition in contact with oxygen for days, and

weeks and months. The experiment fortunately succeeded. In the effective (*neutre*) *bouillon de poule* the anthracoid microbe is no longer cultivatable at 45° C. Its culture, however, is easy at 42° or 43°, but in these conditions the microbe yields no spores. Consequently it is possible to maintain in contact with the pure air at 42° or 43° a *mycelienne* culture of bacteria entirely free of germs. Then appear the very remarkable results which follow. In a month or six weeks the culture dies—that is to say, if one impregnates with it fresh *bouillon*, the latter is completely sterile. Up to that time life exists in the vase exposed to the air and heat. If we examine the virulence of the culture at the end of two days, four days, eight days, etc., it will be found that long before the death of the culture the microbe has lost all virulence, although still cultivatable. Before this period it is found that the culture presents a series of attenuated virulences. Everything is similar to what happens in respect to the microbe in chicken cholera. Besides, each of these conditions of attenuated virulence may be reproduced by culture; in fact, since charbon does not act a second time (*ne recidive pas*), each of our attenuated anthracoid microbes constitutes for the superior microbe a vaccine—that is to say, a virus capable of producing a milder disease. Here, then, we have a method of preparing a vaccine of splenic fever. You will see presently the practical importance of this result, but what interests us more particularly is to observe that we have here a proof that we are in possession of a general method of preparing virous vaccine based upon the action of the oxygen and air—that is to say of a cosmic force existing everywhere on the surface of the globe. I regret to be unable from want of time to show you that all these attenuated forms of virus may very easily, by physiological artifice, be made to recover their original maximum virulence. The method I have just explained of obtaining the vaccine of splenic fever was no sooner made known than it was extensively employed to prevent the splenic affection. In France we lose every year by splenic fever animals of the value of 20,000,000f. I was asked to give a public demonstration of the results already mentioned. This experiment I may relate in a few words. Fifty sheep were placed at my disposition, of which twenty-five were vaccinated. A fortnight afterwards the fifty sheep were inoculated with the most virulent anthracoid microbe. The twenty-five vaccinated sheep resisted the infection, twenty-five unvaccinated died of splenic fever within fifty hours. Since that time my energies have been taxed to meet the demand of farmers for supplies of this vaccine. In the space of fifty days we have vaccinated in the departments surrounding Paris more than 20,000 sheep and a large number of cattle and horses. If we were not pressed for time I would bring to your notice two other kinds of virus attenuated by similar means. These experiments will be communicated by-and-by to the public. I cannot conclude, gentlemen, without expressing the pleasure I feel at the thoughts that it is as a member of an International Medical Congress assembled in England that I make known the most recent results of vaccination upon a disease more terrible, perhaps, for domestic animals than small-pox is for man. I have given to vaccination an extension which science, I hope, will accept as a homage paid to the merit and to the immense services rendered by one of

the greatest men of England, Jenner. What a pleasure to me to do honor to this immortal name in this noble and hospitable city of London.

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Medical Alcoholism.—The *Independencia Medica* contains the following very just criticism :

" In the science of medicine, as in all other human things, fashion holds absolute sway, so that what was rejected yesterday as absurd, is accepted to-day as an undoubted truth. Such is the case in the application of alcohol as a medicinal agent. This mode of treatment originated with English physicians, was imitated by the French, and is now followed with blind zeal by some practitioners in this city (Mexico), without any regard to the differences of climate, of habits, or of sex. Many instances might be cited in support of this assertion, but we will mention only two cases which have recently fallen under our notice.

" The first case is that of a young man who suffered from a simple hemicrania. He called a physician who put him under alcoholic treatment, and made him take, in a short time, an enormous quantity of brandy and ether ; and, not succeeding in curing him, he applied chloroform, which led to a fatal termination.

" The second case occurred soon after, in the person of a lady who was pregnant, and although she passed safely through her confinement, she succumbed afterwards to excessive quantities of alcohol, prescribed by her physicians.

" The physicians to whom we here allude, unfortunately forgot the excellent aphorism : Alcohol nourishes when it warms ; it poisons when it chills the system. (*El alcohol nutre cuando calienta ; enfria cuando envenena.*

" The two examples which we have cited, warrant us in denouncing the tendency to follow the fashion even in scientific questions, for, with many unreflecting persons, it has become a sort of monomania."

If the class of practitioners here described would follow the advice of Celsus, " *De Medicina,*" they would escape these unpleasant results. In recommending the use of the tepid bath after violent exercise, he says that it should be followed by a thorough inunction with oil, to which *wine* and a little pulverized salt has been added. " *Deinde totum quidem corpus, maxime tamen eas partes, quæ in aqua fuerunt, leniter perfricare ex oleo, cui vinum et paulum contriti salis sit adjectum.*"

T. P. C.

INTERNATIONAL MEDICAL CONGRESS, LONDON, AUGUST 3–9, 1881.—ABSTRACTS OF PAPERS READ AND DISCUSSIONS ON STATE MEDICINE.*

Sewage Irrigation a Sanitary Success; by Alfred Carpenter, M.D., Croydon.

The following propositions were supported by evidence adduced from the continuous application of sewage to the Beddington Sewage Farm for the past twenty years.

1.—That the application of sewage to land in close proximity to dwelling-houses is not injurious to the health of the inhabitants of those houses.

2.—That the judicious application of sewage to land will satisfactorily cleanse the effluent water, and fit it for discharge into any running stream.

3.—That vegetable products from fields continually irrigated by sewage are satisfactory articles of food for animals and man; that animals fed entirely on sewage produce are as healthy as similar animals fed on common agricultural produce.

4.—That the excretions of persons suffering from epidemic or infectious diseases when spread as sewage on sewage farms do not tend to produce material capable of setting up similar diseases in those working on, or exposed to the influence of those farms.

5.—That the changes which take place in sewage, when thus treated, are in a direction contrary to that which is necessary to be taken for the development and spread of parasitic and zymotic disease.

6.—That these premises being proved, we may infer that sewage irrigation, properly conducted, in close proximity to dwelling houses, is sanitarily safe. That the pecuniary recompense for residential damage, which is claimed from local authorities, who propose to employ irrigation for the purpose of cleansing their sewage, is based upon false premises. This claim has hitherto been the means of preventing the commercial success of sewage farms; it is one which the interests of sanitary science requires to be steadily objected to, as not having any foundation in fact.

7.—That in consequence of the peculiar productiveness of sewage farms, it is wise political economy to encourage their formation in the neighborhood of all those towns which have an abundant water supply.

8.—That it must be a condition of agricultural success that the rainfall shall be, as far as practicable, separated from the sewage. That the rainfall to the river, and the sewage to the soil, is the best course of proceeding.

9.—That it is a wise sanitary proceeding to utilize the sewage of towns on small areas at the outfalls from their own particular watersheds (or as near as practicable), rather than to concentrate it, so as to make greater depots, which, from their very magnitude, are more difficult to be disposed of.

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* From *The Sanitary Journal.*

Influence of Various Articles of Food in Spreading Parasitic, Zymotic, Tubercular, and other Diseases. By Francis Vacher, F.R.C.S., L.R.C.P., Medical Officer of Health, Birkenhead.

In stating the subject, Mr. Vacher desired to emphasize the word "spreading." As was well known, there was a large number of diseases which might fairly be said to be produced by imported food, as when scurvy followed a diet of salt pork and ship's biscuits, or when eczema appeared in a subject whose diet had been meagre and unvaried. The diseases, however, which there was any good ground for believing might be *spread* by means of food, were far less numerous; still they were diseases of frequent occurrence, and belonged to three distinct orders—miasmatic, parasitic and tubercular.

Food might spread disease in three ways:—1. It might itself be in a pathological condition. 2. It might serve as a culture medium in which disease germs were nourished and multiplied; or 3. It might serve simply as a nidus on which such germs rested.

The foods which alone could spread their own diseases to the subjects by whom they were ingested, were necessarily meat or milk, or their derivatives. There was abundant evidence in support of the view that foot and mouth disease might be spread to the human subject by means of milk. Nor was this surprising, as large vesicles often formed on the udder, and these got ruptured in milking, the result being that the specific contagious liquid of the disease was mixed with the milk. There was also evidence not less abundant, though in some respects less satisfactory, of tubercle being communicated to children who had been fed on uncooked milk from tuberculous cows. As regards meat, there was evidence that a specific disease might be communicated to man by the ingestion of meat tainted with splenic fever or anthracoid disease, and erysipelas (a common symptom in many animal diseases) it appeared might spread to man by means of flesh from a diseased carcase. The only other diseases which could be spread by means of meat were those indicated in the animal by the presence of cysticerci and trichinæ. Latterly there had been a report that cholera had been spread from swine to man by means of lard made up as butterine, but no facts in support to the statement had been produced.

It was probable that almost any perishable food might occasionally serve as a culture ground or fluid for disease germs—especially nitrogenous food. It might be that a little water, a little ammonia in a form readily assimilated, and a temperature not too low, was all that was necessary for the sustenance and multiplication of the low forms of life constituting the germs of some diseases. So little was positively known about the nature of these germs and their manner of reproduction, that we had to be most cautious in receiving statements in reference to them; yet some recorded facts were scarcely explicable on any other theory than that certain germs were capable of growing and multiplying outside the body of the subject from which they were derived. The *materies morbi* of enteric fever and cholera and kindred diseases were contagia, and almost certainly capable of being nourished and bred outside the body; and other contagia doubtless possessed the same faculty, though the proof of its exercise was less clear. Con-

terial of the ham in the Welbeck series—viz., pneumonia, with or without pulmonary hæmorrhage, peritonitis, pleuritis, or enlargement of the liver and spleen. Similar results also followed the inoculation of material obtained by cultivation of the blood and lung juice. Bacilli were found in the blood and exudations of some of the inoculated animals as well as in the purulent matter of tumors found in two of them at the seat of inoculation. Unfortunately, in this instance none of the food to which the illness was attributed was obtainable for examination.

It is submitted that, by the description of these two series of cases, an acute specific disease has been defined which has not been defined hitherto, and it is suggested that such cases of this disease as have been heretofore noticed by observers have been regarded in the light of cases of poisoning (as by sausage, etc.), whereas there are marked distinctions between the two classes of cases.

In the discussion on the group of papers dealing with the Home Contagia, Dr. Ezra Hunt (United States) considered it an important question how far such direct methods of prevention as are typified by vaccination may not be extended, for it is certain that much depends upon the channel by which infection is introduced into the system. However severe the result of inoculating an animal beneath the skin with the virus of pleuro-pneumonia, that method of its introduction prevented the disease from attacking its favorite organ—viz., the lung, perhaps owing to a sort of dilution of the poison, the result of lessening the amount which might otherwise have been introduced by the extensive surface presented by the air-cells of the lung. Special stress was also laid upon the necessity of applying hygienic measures to persons as well as to places, so as to lessen their susceptibility to infection. It may be possible by personal hygiene to do much which will maintain an antiseptic condition of the system, which shall enable it to resist such infection as it may be exposed to, and by the sustained use of anti-zymotics during what would otherwise be an incubative period, to limit or prevent the development of infection.

Dr. Dahl (Christiania) drew attention to the spread of infection by means of rags amongst those occupied in the manufacture of paper, and expressed the opinion that, short of boiling, no disinfection was efficient.

Dr. Beveridge (Aberdeen) drew attention to the voluntary notification of diseases in Aberdeen, and pointed out that, notwithstanding the large sum paid for the certificates, there had, owing to the lessening of infectious disease, been a large saving in the expenditure by the Sanitary Committee. He expressed his disbelief in the process of disinfection by heat, and gave instances to show that, even when 300° F. was reached in a stove, a single fold of cloth prevented the temperature from rising within that fold.

Dr. Thorne Thorne, one of the Hon. Secs., desired to draw the attention of the Section to two points. The first related to the influence of a notification of infectious diseases in securing the isolation of the sick, and so in preventing the spread of infection. He first instanced the case of Leicester, where every four or five years several hundred deaths had resulted from scarlet fever, the fatal cases varying from 265 to 299 in each epidemic referred to. In June, 1879, the disease again

became epidemic, and bid fair to assume very large proportions, but in September of that year a system of notification of infectious diseases came into operation, and by means of it 159 first attacks, occurring in crowded streets and alleys, were removed to a hospital provided by the Sanitary Authority, the result being that, whereas in the months September and December, 1870, when no hospital and no notification existed, as many as 217 scarlet fever deaths had been caused, only 65 resulted during the same period in 1879. The case of Warrington was also referred to, scarlet fever having somewhat suddenly appeared in all parts of the borough in the year 1880. Out of 77 first attacks reported during a stated period, under a system of notification of infectious diseases, 72 were isolated, and the disease as an epidemic practically ceased. Instances were also recorded, showing how a voluntary system of notification had failed, owing to the unwillingness of a single medical practitioner to join in it. The next subject to which the speaker addressed himself related to the subject of disinfection by dry heat. He stated that, as the result of an extensive inquiry, he had no hesitation in expressing an opinion that the stove designed by Dr. Ransome, F.R.S., of Nottingham, and manufactured by Messrs. Goddard and Massey, of that town, was not only the most efficient apparatus for disinfection by dry heat with which he had met, but that it was thoroughly successful to that end. The difficulty in securing a thorough penetration of heat into the interior of articles such as bedding, etc., to which Dr. Beveridge had referred, had been completely overcome; and not only could this be secured, but it was obtained at the smallest possible cost; because, on account of the automatic action of the stove, not one farthing's worth more gas was expended as fuel than was necessary to maintain the interior of the stove at the required temperature, and by reason of the same action, the cost of a skilled superintendent was avoided. Thus in many towns the stove was filled at night with bedding and clothing, which included costly articles, such as silks, crape, furs, sealskins, etc., and it was then left in action until the following morning without any supervision whatever and without risk; it being known that, during the whole period, the temerature at which the regulator had been set, and which, as a rule, varied from 248° to 258° F., had been maintained in every part of the stove.

Dr. W. Ogle (London) also testified to the efficiency of Dr. Ransome's stove, alleging that, where articles had been dealt with in it, no second case of infection had ever come under his notice, and that the statement to the effect that the temperature necessary to disinfect woolen articles of clothing would also spoil them was not borne out by his use of this stove. There were stoves and stoves.

Mr. B. Balding (Royston) bore similar testimony as the result of his personal experience.

Dr. Henri Heurot (Rheims) described and exhibited a filter which could be placed over the mouth and nares, and which would enable the physician to remain for any length of time in the immediate presence of infectious patients without risk.

Dr. Tripe (London), referring to the two small-pox hospitals within the district for which he was Medical Officer of Health, stated that the mortality from small-pox in the streets in the neighborhood of

the hospitals amounted to 4.1 per 1,000, whilst amongst the remaining population it was only 0.21 per 1,000, and he considered that the disease spread from the hospitals, and this by other means than the air. As regards the fever hospital, scarlet fever and enteric fever were not more rife round the hospital when it was in use than in other parts of the district.

Dr. Grimshaw (Dublin) supplemented Dr. Stopford Taylor's paper by showing that the small-pox epidemic of 1871–2 in Dublin had its origin in Liverpool, and referred to another instance of the importation of small-pox from Brooklyn, *via* Liverpool. He also strongly insisted on the importance of securing a system of compulsory notification of infectious diseases to the local sanitary authorities.

Dr. Dudfield (London) laid special stress on the necessity of a general system for the notification of infectious diseases, in order to enable sanitary authorities to prevent the spread of infection by isolation and otherwise. He had hoped that the Section would have passed a general resolution expressing their opinion on this subject, but having been informed that there were reasons which rendered it undesirable that any general resolution should be passed, he trusted that the obvious unanimity which had prevailed on the subject might have the same weight as any resolution could have had.

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Babies' Troubes.—"A man," said Rev. Plato Johnson in the course of a very eloquent sermon, "is a very curus animule. He is de only animule dat don't have a good time when he is a baby. Did dat idee ever 'cur to your mind before? After he is dead he may go to hebben, but after he's born, an' till he gits able to take care of hisself, he has no comfort, an' he don't let nobody else hab any. Look at de dogs, wat a time dey has togedder. Dey is born free or four at a time, so dey needn' be lonely, an' de minute dey gets dere eyes dey begins to play an' fool wid each other an' to 'joy deirselves. Look at de lamb. Well, dat lamb of Mary's had a good deal better time dan Mary had herself before she was big enough to go to school. Whoever heard of a lamb's havin' de toofache or de measles or colic? W'en night comes de calf lies down quiet by de side of its mudder, an' dat's de last you hear of it till sunrise nex' mornin'. Did you ever hear of a calf havin' de chickenpox or de mumps? Echo answers, 'None of dose tings 'curs in de lower animule world.' Now how is it wid de human baby? He ain't gen'rally in de world mor'n half an hour before he begins to let de whole neighborhood know dat he's come at last, an' intends to stay. He's got a immortal soul, which Mary's lamb had to go widout; but it does seem to me, brethren dat he pays for dat privilege wid a lot of things dat de lamb and de dog wouldn't have on no consid'ration. He no sooner gits well started before he has to bite a rubber ring all day to get his teeth through, an' w'en dey's comin' through de fader has to tote de baby all nite, an' de baby yellin' all de time loud 'nuff for a town crier. No, de fac' is dat de human animule done have nó happiness till he grows big 'nuff to have a home of his own, an' even den his misery has just begun. Brethren, dis complex problem has spiled my sleep a great many times."—Religious Miscellany, *N. Y. Herald.*

SUPPRESSION OF INCOMPETENT MEDICAL PRACTITIONERS AND SMALL-POX; RAILROAD SANITATION, AND DANGERS OF SUMMER RESORTS.

PROCEEDINGS OF THE ILLINOIS STATE BOARD OF HEALTH; SPECIAL REPORT.

The regular quarterly meeting of the Illinois State Board of Health was held at the Grand Pacific Hotel, Chicago, September 29 and 30, 1881. All the members were present, viz.: J. M. Gregory, LL.D., President; Anson Clark, M.D.; W. A. Haskell, M.D.; R. Ludlam, M.D.; N. Bateman, LL.D.; John McLean, M.D.; John H. Rauch, M.D., Secretary.

Dr. Jas. M. Bryden, having been previously notified that complaints had been lodged against him for advertising improperly, and contrary to the rules of the Board, appeared in his own defense.

He is a graduate of the College of Physicians and Surgeons, of Indiana, formerly practiced in the city of Chicago, but is now practicing in Fon du Lac, Wis., and has been advertising in the papers of that city, calling himself the Scotch physician, and "displaying" a wood-cut of himself. He admits that he left the State because he thought his certificate would be revoked if he continued his advertisements.

The following resolutions were adopted: (1) That on condition of withdrawal from the papers of all advertisements, except the ordinary physician's card, and without the wood-cut of his portrait being inserted, the prosecution of this case of Dr. Bryden shall be dropped. (2) That in all cases where information comes to the notice of the Secretary of the State Board of Health, that persons holding certificates from said Board are advertising in an unprofessional manner, or in any way are guilty of unprofessional and dishonorable conduct, it shall be the duty of the Secretary to notify them at once to appear before the Board and show cause why their certificates should not be revoked.

Dr. Ludlam offered the following:

Notice to appear before the Illinois State Board of Health.

Whereas, Complaint has been made at this office that, as a licentiate of this Board, you have been guilty of irregular and unprofessional conduct; and

Whereas, If such charges should prove to be true, it will be necessary, under the statute, for the Board to withdraw your certificate;

Therefore, You will please be notified herewith that an opportunity will be afforded you at the next meeting of the Board to present such papers and evidence in explanation and defense as you may have to offer in said case.

The case of Julius L. Lins, of Wallingford, Will County, was then considered. Lins made an affidavit in 1878 that he was a graduate of the University of Marburg, Germany, and had practiced medicine in Illinois ten years prior to July 1, 1877. Because of this ten years' practice he was not compelled to present his diploma for verification *at that time*. The truth of this affidavit being questioned, the Dean of the Faculty of the University of Marburg was addressed, and the

fact that he had never graduated there was ascertained. The Board ordered that his certificate be revoked and canceled.

President Gregory laid before the Board a letter from Dr. G. H. Leach, of Cairo. The letter complained that W. H. Marean, of Cairo, had a certificate of practice from the Board to which he was not entitled. Intimations were also made as to improper methods of issuing certificates by the Board.

Dr. Rauch offered the following, which was adopted.

Whereas, Dr. G. H. Leach, of Cairo, in a communication to the Attorney-General of this State, dated August 23, 1881, made certain charges in connection with the case of Dr. Marean, of Cairo; therefore

Ordered, That Drs. Leach and Marean be cited to appear before this Board at its next meeting to show cause why the certificates issued to each of them should not be revoked.

Dr. Rauch read his quarterly report as Secretary, of which the following is a brief synopsis:

Since the last meeting 553 letters and 421 postal cards have been written; 5,552 circulars and 1,850 packages have been distributed, including 1,820 reports of the Board and Register of Physicians and Midwives. Certificates have been issued to 92 physicians on diplomas, 5 on years' practice, and 3 upon examination, 8 to midwives on diplomas or certificates of examination, nearly all from foreign institutions, 3 on years of practice, and 5 after examination. One diploma has been held for further consideration, one was withdrawn while being considered, and 23 doctors have been obliged to leave the State, because of their inability to comply with the law. An inquiry has been received from Portland, Oregon, where a diploma from the Edinburg University of Chicago was presented to the Medical Director of the A. O. U. W. He was at once informed of the fraudulent character of that institution, and the action of the Board with regard to the same. The distribution of the official register makes the work of the Board less onerous, although there is still considerable annoyance from itinerant quacks who claim the benefit of the ten-year exemption clause.

In view of this fact I would respectfully recommend that the Board take the necessary action, defining that section of the statute. (*Vide Infra.*)

Small-pox has appeared at five new points, and it will continue to occur while immigration is so heavy from Europe. Because of this probability the Board should urge the protection of all by vaccination and re-vaccination, and I would also urge the Board to pass a rule making it obligatory upon the authorities of any township, town or city to report promptly to this Board, the outbreak of any contagious or epidemic disease, as I believe it would be of the greatest benefit to all parties concerned. The experience of the last nine months, especially in connecttion with small-pox, has impressed me with the necessity of the preparation by the Board of a sanitary code of ordinances for the adoption by local authorities throughout the State. (*Vide Infra.*)

Another important matter to which my attention has been frequently called during the last three months, is the condition of the

Illinois River. In view of the sanitary importance of improving its polluted condition, it is clearly the duty of the Board to do all it can to hasten the construction of the pumping works at Bridgeport.

Railroad Sanitation.—Although a subject of the utmost importance, and one affecting a large majority of our population, it has not yet received the attention which it demands. The hygiene of the emigrant trains is notoriously bad, but even the more elegant means of travel are far from faultless. During the past year travel on all lines has been exceedingly heavy, and this has tended largely to aggravate the already existing evils.

As bearing directly on this subject, I call the attention of the Board to the following correspondence:

Office of the Secretary, Sanitary Council of Mississippi Valley,
Chicago, May 24, 1879.

To Col. D. N. Welch, *General Superintendent Pullman Palace Car Co.:*

Sir: Enclosed herewith I transmit, for your consideration, a slip containing the substance of a discussion on railway sanitation, before the National Board of Health, on May 7, at Atlanta, Georgia, as also the propositions adopted by the Sanitary Council of Mississippi Valley.

Will you please inform me what measures are now adopted by your company to keep the sleeping-cars in good sanitary condition; and also what you did last summer and autumn, during the prevalence of yellow fever, and what disposition was made of the cars in which yellow fever patients were carried?

In this connection I beg to offer certain suggestions, upon which I should be pleased to have an expression of your judgment. In my opinion, the upholstering of parlor and sleeping-cars is too heavy, either for comfort or health, in summer. Could they not be put in what might be called a *summer dress* from May to September, the seats be furnished with cane bottoms and backs, or covered with leather or enameled cloth? or, if the plush upholstery must be retained, then cover it with linen or other material that could be often changed and washed; substitute the same material for the heavy woolen curtains, and dispense with carpets entirely? Woolen stuffs absorb and retain waste matters much more readily than linen, and are much more difficult to cleanse; consequently, they are much more liable to convey infection. From a strictly sanitary standpoint, it would probably be better to construct a different style of sleeping-car, for use exclusively south of latitude 37° N. A car starting from Chicago and running through to New Orleans is frequently subjected to great extremes of temperature. Unless provision can be made both for summer and winter ventilation, such extremes must necessarily be deleterious to health, aside from the question of comfort.

I am also of opinion, in common with other sanitarians, that long distance through-cars—as, for example, from this city to New Orleans, or to New York, or from New Orleans to Washington, are not conducive to public health, but, on the contrary, are often promoters of contagious and infectious diseases. The change to a fresh and clean car at Cairo, Pittsburgh, Buffalo, or Atlanta, as the case might

be, would no doubt diminish the risk of contagion or infection, if, indeed, it did not add to the safety of the traveling public in other ways—and such a change could be made with little inconvenience or trouble to passengers.

Very respectfully, JOHN H. RAUCH, *Secretary.*

Pullman Palace Car Company, General Superintendent's Office, Chicago, June 16, 1879.

JOHN H. RAUCH, M.D., *Secretary Sanitary Council of Mississippi Valley, Chicago:*

DEAR SIR: In reply to your letter of the 24th ult., asking for information as to what measures are now adopted to keep sleeping cars in a good sanitary condition; also what we did last summer and autumn, during the prevalence of yellow fever, etc., I have to say that, immediately on receipt of your letter, I forwarded it to the General Superintendent of our Pullman Southern Car Company. After receiving his full report on the subject, I forwarded the papers to the Superintendent Central Division of the Pullman Palace Car Company, whose reports, and also that of Major Hays, General Superintendent P. S. Car Company, will be found herewith.

You will perceive, by examination of the two reports, that the questions you ask are pretty thoroughly answered therein; therefore it is not necessary for me to go particularly into details. Ever since the organization of the Pullman Palace Car Company, up to the present time, the question of the free use of disinfectants and detergents has been one to which the company has given much attention. The formula for the disinfectant now in use is the one recommended by the American Public Health Association, at a session held in New York in 1872 or 1873, and since its adoption it has been constantly in use on our cars; and we are informed by medical men and chemists that there is no better disinfectant for the purposes for which it is required. We had passed through two seasons of yellow fever on our coast lines before the extraordinary epidemic of last year, so that we were pretty well prepared to meet the emergency.

Whenever we have had a case of fever, the car has been thoroughly fumigated with sulphur, then laid by until it was believed that the germs of contagion were entirely destroyed. We are very certain that the disinfectants are thoroughly used in the cars, as the matter is continually being reported upon by our inspectors and special service men, and we are equally sure that our linen is clean on every trip, that the carpets are taken up and well beaten, and the plush and other interior arrangements of the cars thoroughly cleansed. The mattresses are frequently reupholstered, and the pillows, blankets, etc., are thoroughly cleaned at stated times, and if inspection shows that anything of that nature requires treating oftener, the inspector immediately makes a report to that effect to this office.

In regard to the matter of ventilation, we will be very glad to receive any suggestions that any Sanitary Council may see fit to make. We are constantly experimenting with new ventilators. Most of the so-called inventions, however, are impracticable. Such as we find to

be of benefit, we adopt. We are now experimenting with several styles of ventilators, one of which, at least, we hope will be found of some benefit.

In regard to making short runs, we have no doubt that in a sanitary point of view short runs would be better for the passengers, but that is a matter we cannot control. The railroad companies and the traveling public are in favor of long lines. Passengers will submit to a great deal of discomfort rather than change cars, and it is probable that it will be some time before their views will be altered.

Regarding your suggestion that cars should be built for a climate south of lat. 37°, which should consist of entirely different interior fittings to those used in the north, I would say that such a change would entail upon the southern company a great expense. We made the attempt, several years ago, to furnish sleepers to a southern road with hard finished floors without carpets, but on arrival of the cars at their destination, the railroad Superintendent ordered carpets put down at once, as he was afraid his passengers would think they were being provided with second class accommodations.

At the same time, if we had cars fitted solely for southern summer travel, we should be obliged to lay them up in winter, and provide others for northern people making winter trips south. At the present time, with limited travel, the carrying out of your suggestion would be too expensive for us. We would be very glad, for such cars as are used on the southern roads, to supply hard wooden floors to them as fast as they go into shop, and not use carpets in summer. This is a matter that we will confer with the southern superintendents about as early as practicable.

In conclusion, I would say that we will be very happy to hear any suggestions from the Sanitary Council in regard to matters discussed in their convention at Atlanta in which we are interested, and so far as practicable will be pleased to adopt them.

Very respectfully, D. N. WELCH,
Gen. Sup't. P. P. Car Co. and Vice Pres. P. S. Car Co.

Pullman Southern Car Company, General Superintendent's Office,
Louisville, May 29, 1879.

(Respectfully returned to Col. D. N. Welch, Vice-President, Chicago.)

I have carefully read the enclosed clipping from the *Atlanta Constitution*, of the proceedings of the National Board of Health, relating to the yellow fever epidemic of 1878; Dr. Rauch's letter and your endorsement of the 27th inst., referring the papers to me for a report of the measures used by the company to prevent the spread of the disease by means of our cars, etc.

In reply I would state that early in July of 1878, when the Vice-President and myself were in New Orleans, there were rumors of some few cases of yellow fever, and not a few predictions of an epidemic; and at this early date, to guard against probable emergencies, additional sanitary measures were inaugurated, and the use of disinfectants in our cars was commenced. We sought and obtained the best medical advice as to the use of disinfectants, and before

the disease had developed itself we were using every precaution under a well-defined system; and by the time the tide of travel had set northward, this system was in full operation under rigid discipline.

All our cars were thoroughly disinfected at *every terminus of our lines*, and pure carbolic acid was exposed in open vessels in every car while en route. At terminal points every car was thoroughly cleaned—all bedding, seats, carpets, and in fact everything movable in the car, were taken out, whipped, brushed, and then fumigated in a close room with sulphur. Each car was scrubbed inside and out, and then closed and fumigated with sulphur. After this process with car and equipments, they were both exposed to the open air for several hours, carefully dusted, and both car and equipments liberally sprinkled with carbolic acid. Carbolic acid was put in each spittoon on every car running into or through any infected district five or six times during each day or night. All cars were thoroughly ventilated while en route, by open doors, windows and deck sash.

As soon as the disease was declared epidemic in New Orleans, Memphis and other points, our cars were withdrawn, as in the case of the lines from New Orleans to Chicago and St. Louis, from Louisville to Memphis and Little Rock, and from Cincinnati to New Orleans, via Montgomery. We had one line of sleepers only that continued unbroken during the entire epidemic—the line from New Orleans to Cincinnati, via Milan. On this line all cars were treated at each terminal point and en route as above indicated.

During the entire course of the epidemic we did not have a single case reported to us of yellow fever occurring from any *supposed infection* from our cars; and in *every instance* when any person coming from any infected district was taken sick on one of our cars, *not only the person*, but *the mattress, pillows, blankets and sheets as well, were removed at the first station; and all bedding and material thus removed was invariably destroyed—in no instance was any portion of it ever returned to a car.*

We do not know of a single case, *nor do we believe one can be found*, of yellow fever developing itself on any of our cars, *except in persons coming north from infected districts*, and in whose system, beyond a doubt, the germs of the disease were implanted before they undertook the journey. In every case of this kind (and they were very few) the persons, and everything movable in the car with which they had come in contact, were removed from the car as above described.

As before stated, all of our lines, except the *one* noted, terminating south in infected localities were either contracted to the northern confines of the district in which the disease had been declared epidemic, or entirely withdrawn.

The one exception, from New Orleans to Cincinnati, via Milan, our cars were cleaned, and all the bedding and equipments therein handled at Cincinnati by men living in that city; and not only no case of yellow fever, but no case of disease of any nature, developed itself among any of these men during the entire summer and fall.

In contracting our lines as the disease manifested itself in Memphis and other points south, in the latter part of July and the early

part of August, all lines whose northern termini were in this city (Louisville) were entirely withdrawn, and thenceforward, until after the Board of Health had declared it safe for citizens to return to Memphis, *not a single sleeping car coming from an infected district came into this city;* the cars on the line from New Orleans to Cincinnati passed around the city by the short line cut-off, leaving the main stem of the Louisville and Nashville railroad three miles south of the city. .....

In conclusion, I would say, were steamboats as careful of their equipments and general sanitary condition—*were the traveling public one-half as careful of their clothing and baggage,* to prevent the spread of infectious diseases—as our service require, I opine there would be less need of such strict quarantine measures; but under existing regulations, I am in favor of the most thorough investigation, in cases of epidemic, of all persons and things leaving any infected locality. We have always done everything possible to prevent the spread of disease by means of our cars—have done much more than the National Board of Health appears to require; and we would like to see such measures inaugurated as would prevent the transportation of infected clothing, merchandise, etc., as this is undoubtedly the source from which the most danger is to be apprehended.

THOMAS S. HAYS, *General Superintendent.*

Pullman Palace Car Co., Central Division, Superintendent's Office, Philadelphia, June 7, 1879.

Respectfully returned to Col. D. N. Welch, General Superintendent, having noted carefully the within correspondence, and give below a report of the manner of handling cars, bedding, equipments, etc., in Central Division.

All mattresses, pillows, seats and blankets are thoroughly aired, beaten or shook at the termination of each trip, which will make an average of three times per week that they receive this treatment.

As a disinfectant we use a mixture of carbolic acid and copperas, or carbolic acid alone, applying the same only in urinals and closets.

The only case of yellow fever that we had in any car of this division was in sleeping car No. 287 *en route*, St. Louis to Jersey City, September 13–15. A lady passenger, who entered the car at St. Louis, complained of feeling sick, but supposed it to be a case of chills and fever, until the train arrived at or had passed Pittsburgh, when the passengers in the car concluded it was a case of yellow fever. The car went through to its destination, Jersey City, and was immediately switched over into the side or freight yard, the authorities notified, a tug chartered and the lady and her husband taken down to the quarantine station in New York harbor, some time about three or four o'clock in the morning.

The physician of the Penn. R. R. Co. was given charge of the car, and he immediately disinfected it, which he did in a most thorough manner, as our reports will show, the equipments and all the interior of the car, so far as metal work, etc., were concerned, being almost completely ruined by the use of acids. After they were through with disinfecting the car, it was sent to Altoona and remained in an exposed position during the winter, at a temperature of weather

sometimes as low as 13° below zero. The car was then shopped for thorough and general repairs, costing nearly four thousand dollars.

As has been our custom, which we are still pursuing, all cars, at the termination of each and every trip, are thoroughly washed and cleaned, bedding and equipments aired and dusted, carpets taken up and beaten, and as you will see by your pay-rolls, we have quite a small army of cleaners doing this class of work.

E. H. GOODMAN, *Superintendent.*

Since the foregoing correspondence I have traveled, at least, 45,000 miles in sleeping cars. I have paid especial attention to this subject, and have reached the conclusions which follow. The condition of the car depends on : (*a*) the handling of the car by the conductors and porters ; (*b*) the number of passengers ; (*c*) the length of the run ; (*d*) the season of the year.

It is but just to state that the sanitary conditions of the Pullman cars are better than any other cars, and from correspondence and personal interviews I am satisfied that the company would cheerfully adopt the suggestions if the public demands the same. My excuse for calling attention to the subject at this time is to educate the public to the dangers incident to traveling in through cars.

In 1879, when no cars were allowed to cross the Ohio at Cairo, transfers were daily made ; and not only was there no complaint, but much commendation of the method. I would respectfully suggest that this Board take such action as may be deemed proper to the subject, feeling confident that the traveling public will cheerfully comply when its benefits are made known, and the companies will gladly make the change.

Dangers of Summer Resorts.—I was at Beach Haven, on the New Jersey coast, when the Parry House was destroyed by fire. The fire was discovered at 3 A.M., and as the building was constructed of the lightest material it was completely destroyed within an hour.

It seems almost miraculous, with the limited means of egress, that no lives were lost. I have been in burning hotels, but never were the inmates so completely at the mercy of the flames as in this instance. As it was, several have since died from the exposure and excitement incident to the fire. This hotel is a type of the scores to be found on the New Jersey coast ; and unless steps are taken to require adequate means of escape and facilities for putting out fires, it is only a question of time when great loss of life will occur. In view of the fact that during the season thousands from other States are guests at these houses, I think it would not be out of place to suggest that our Board call the attention of the New Jersey State Board of Health, and the Boards of Health in other States where such resorts exist, to the subject, and to respectfully recommend that, in case there are no laws concerning it, they make an inspection of these buildings, covering these points as well as the sanitary conditions that obtain in and around the houses. The publication of such a report would go far towards remedying the evil.

The report was discussed, and the following resolutions and orders therein suggested were duly adopted by vote:

Whereas, In several instances, recently, where suits have been

brought against parties for the violation of the "Act to regulate the practice of Medicine," advantage has been taken of the ten-year clause by those who do not strictly come under its provisions; therefore,

Resolved, That it is directed by this Board that the ten-year exemption clause as a qualification means that the party who avails himself of the said exemption must have actually been engaged in the practice of medicine as a means of gaining a livelihood, and must have publicly professed himself to be a physician for a period of ten or more years before July 1, 1877; further

Resolved, That parties who have only occasionally prescribed during that time are not by this Board considered as entitled to the benefits of the exemption.

Orders and Resolutions.—Under the authority conferred upon the State Board of Health, by Section 2 of the State Board of Health Act, it is ordered that on and after January 1, 1882, the first cases of small pox occurring in any township, town or city in this State shall be promptly reported to the Board, and also the prevalence of any epidemic by the local health authorities, it being borne in mind that in counties where township organization exists, the township board is the Board of Health; and in counties not under such organization, the County Commissioners act in like capacity.

Resolved, That the Secretary of the Board be, and is, hereby instructed to request the medical schools of the State to give one or more lectures each year on the relations of the profession to the public and to each other, believing the same to be in the interests of the people and of medical men.

Drs. Clark, McLean and Bateman, Committee on Railway Sanitation, reported as follows:

Whereas, Earnestly believing that many sanitary evils exist with regard to the management of emigrant trains, ordinary passenger trains, sleeping coaches, the grounds and buildings of depots, and even the trains for the transportation of goods and merchandise; therefore

Resolved, That the Secretary of this Board be instructed to communicate with the managing authorities of the various lines in this State calling their attention to this matter, and requesting them to take such steps as they consistently can with reference to sanitary improvement in these respects.

John T. Spence, of Liberty, Adams Co., having applied for a certificate of graduation, presented the diploma of the College of Physicians and Surgeons of Joplin, Mo. Upon motion of Dr. Clark the following order was adopted:

Whereas, It appearing from the published announcement of the Joplin College of Physicians and Surgeons at Joplin, Mo., that the said medical college is not conducted according to the custom of such institutions considered in "good standing," in that it recognizes three years of practice as equivalent to one course of lectures, and that the general character of the announcement is such as to make it evident that it is not conducted in accordance with the practice of medical schools that are considered in "good standing" by this Board; therefore

Resolved, That this Board declines to issue a certificate to its graduates.

Three other practitioners' actions were taken under advisement by the Board, and in one case discretionary power was given to the Secretary to revoke the license.

Dr. Bateman moved that the Secretary be authorized and instructed by this Board to prepare and issue, as soon as practicable, the necessary blanks, forms, circulars and instructions for the collection and tabulation of returns of vital statistics.

Upon motion of Dr. McLean, the Secretary was instructed to issue a circular calling the attention of college authorities to the requirements of this Board in respect to the good standing of medical colleges, as published in its report.

The case of Dr. M. H. Pasco, of Chicago, was referred to the Secretary with power to withdraw the Board's certificate at his discretion, and report his action at the next meeting.

Drs. Rauch, Gregory, and McLean were appointed a committee to report to the Board at its next meeting as to what action, if any, was necessary on the subject of maritime quarantine.—Adjourned.

JOHN H. RAUCH, M D., *Secretary*.

Chicago, Ill., Oct. 14, 1881.

The Mortality of Brakemen on the railroads of the United States is said to be so great that they find it difficult to get their lives insured. It is estimated that there are at least ten brakemen killed throughout the country every day while coupling cars and making up trains, or are knocked from the top of the cars by bridges, or slip, or fall, or are injured or killed in collisions. And there are probably three times as many injured as are killed, of whom the public get no account. Ten brakemen killed every day are equivalent to 3,650 during the year, which, added to the number injured in various ways while on duty, give the sum total of deaths and injuries at 14,600 a year. A truly frightful fatality, of which the public appears to take little account, showing that the vocation of a brakeman is perilous in the extreme, while it is a notoriously poorly paid one. Some insurance agents in some parts of the country do not take risks on employees on freight trains; but conductors and brakemen on passenger trains, where there is less danger, are insured by their paying an extra per cent. Railroad men say that only about 25 per cent. of the brakemen of freight trains die a natural death; also, that the average life of the brakeman, after he goes on the road, is about 10 years.

HYGIENE IN MEDICAL SCHOOLS.

Ego fallor, aut ad ipsa templa te ducet
Appollinis, domosque *Hygeæ* sacratas.
Ingredere ; dictis plura scio reperturum.

For years past Surgery has disputed with the Practice of Medicine for the honor of holding the first rank in the "Healing Art." Each has its appropriate chair in medical colleges, from which the well approved doctrines of its respective departments are dispensed, by professors of well recognized ability and well earned reputation. Each has its separate societies, its separate clinics. There is, in each division, an *esprit de corps* which prompts every member to labor zealously to sustain the honor and interest of his favorite theme. And yet it is not so long since their relations were very different. It seems but as yesterday since the younger competitor was despised, neglected, relegated to the care of the village barber. Surgical anatomy, surgical pathology, and the other handmaids of the new science were entirely neglected or unknown. The vast amount of human thought concentrated on this subject at the present day, makes the aphorism of Ambroise Paré specially applicable—

"Celuy qui pour avoir, et non pour scavoir
Se fait Chirurgien, manquera de pouvoir."

But there is another claimant for academic honors, another aspirant for recognition among the galaxy of sciences to which modern thought and the aggressive spirit of modern investigation has given birth: Hygiene is knocking loudly at the doors of college halls for admission; her claims have been heard by some and recognized by a few, though not so fully as they deserve. There are now, in almost every civilized country, Public Health Associations, in which the ablest men in the profession meet to discuss the great and important questions relating to public health; and the interest manifested in these discussions foreshadows the important place that this subject is destined, at no remote period, to hold in medical teaching and among medical schools. This subject will undoubtedly become the most important of all the branches of medical education. Its field is almost boundless, for it ranges through nearly every department of physical science. Its principles are among the simplest and among the most obscure and recondite. And this wide range of subjects will constitute in it one element of weakness, for the half educated stripling just from an elementary class in a public school often imagines himself an expert in hygiene, obtains a position from some of the Health Boards *run* by politicians, and dictates to those around him rules and principles that he himself will never understand. In March last the "*Progrès Médical*" announced a course of lectures on Hygiene, before the *Faculté* of Paris, by Professor Bouchardat, in nearly the following terms: "It is now necessary that our future doctors be skilled in hygiene; that they be familiar with all the improvements in sanitary science, in order that they may be able, in their practice, to apply them for the preservation of public health."

"But," the writer continues, "in order to attain this end, a complete change is necessary in the method of teaching; hygiene must be freed from the reputation of being an easy science, one readily acquired without study; it must be presented in its true character; laboratories for research and demonstration must be formed; museums of articles of interest to the hygienist must be organized, and practical teaching must accompany theoretical instruction."

With the view of giving greater scope to the consideration of the questions relating to hygiene, to afford suggestions to those who desire to put it on a proper basis, and to help those who may wish to form the nucleus of a museum calculated to assist the professor, the SANITARIAN gave, in the September number for the present year, a very complete list, taken from a circular issued by Professor Bertin Sands, of Montpelier. The appeal made by him can be equally well made by any one who takes an interest in the subject, and it is hoped that before long every medical college in the country will have a chair specially devoted to teach this all important branch.

In 1856, Pettenkofer organized, after repeated efforts and many disappointments, a chair of hygiene in the University of Munich. Subsequently the council of the university determined to erect a separate building, to be devoted exclusively to this department, and in 1873 the undertaking was begun, and since 1878 has been in successful operation. This building has a front of 175 feet, and covers an area of nearly 1,000 square yards. The auditorium was at first intended to accommodate 150 students, but was finally reduced to 110 seats. There is room for 30 students to work in the laboratory, exclusive of the laboratory reserved for the professor and his assistants. The institution is munificently furnished with the most complete set of apparatus for chemical and physiological experiments, and has, besides, an extensive library, embracing all the important works relating to hygiene.

The memorial to be erected in London to the memory of the late Professor Parkes will, no doubt, be very complete in all necessary appointments. This institution grew out of the connection of Professor Parkes with the Army Medical School at *Netley*. Indeed, the existence of this celebrated school and the equally distinguished institution at *Val de Grace* shows very clearly the greater appreciation felt for hygiene by those who are guided by a sense of duty rather than by self-interest. Besides the institutions already mentioned, devoted exclusively to hygiene, there are chairs given to this subject specially in the Universities of Leipsic, Dresden, Berlin and Vienna; and measures have been adopted to found others in Utrecht, Amsterdam and Stockholm.

Two institutions have been lately founded which promise to rival those of longer existence—one at Bordeau, due to the active exertion of Professor Layet, a member of the faculty of that city; the other at Turin, organized by the untiring efforts of Professor Luigi Pagliani. This zealous worker has visited every institution of the kind in Europe, and selected, with the greatest care, the most useful and important features of each. Both Pagliani and Layet have fully recognized the defects in all the great schools, and these defects have spread from too close an imitation of the methods of Professor Pet-

tenkofer. It is well known that this distinguished scientist has devoted his energies almost exclusively to chemical investigations. All the departments of physics have been recognized, but principally in those parts in which their relations to chemistry are most marked. Engineering, architecture, and similar departments have been comparatively neglected.

The *Giornale della Societa Italiana d'Igiene*, says of the laboratory at Turin that it will be most complete in everything that can contribute to make instruction in the department of Hygiene successful. The lectures of Professor Layet have been published in the *Gazette Hebdomadaire des Sciences Médicales*. Among the most interesting of these are his lectures on the Respiration of Animals, and particularly, those on the Respiration of Aquatic Animals. At the international "Congres d'Hygiène" held at Turin, Professor Layet offered the following resolution, which was unamimously adopted:

"The Congress, convinced of the necessity of practical teaching in Hygiene, express the hope that such teaching will receive all the attention which it deserves from universities; and particularly, that laboratories for experiment and illustration be furnished, and museums for the representation of everything relating to hygiene, be formed."

It is to be hoped that every college in the country will make the attempt to introduce the subject of Hygiene into its regular course, with as little delay as possible. Every Medical school in the land is now laying claim to the honor of being the first to introduce clinical instruction into its course. Before many years they will claim to be the pioneers in introducing regular instruction in Hygiene, they will boast of having the largest and most complete laboratories for that purpose, and, not the least, of having the ablest and most experienced professors to demonstrate its most important truths. The foundation of such a course will not be without special difficulties and disappointments. The subject of Hygiene is so extensive that the professor will endeavor to cover too much ground, and his instruction will become superficial and unsatisfactory. In university courses he may trench on ground already occupied by the chair of physics, mechanics, organic chemistry and the like, and then misunderstandings will arise. Such an occurrence has already taken place in Milan, and the *Giornale*, cited above, says that "This prejudice is too much diffused even in high places, and offers serious opposition to the spread of instruction in hygiene in schools." When the professor, as in the instance here referred to, devotes a lecture to the "Osseous system—the general characteristics of the bones—Division of the bones—Substance of the bones—Structure—Periosteum and medulla—Union of the bones—Physiological properties—etc.; and another lecture to Osteology; then passes into the mechanics of muscular action, after having described minute anatomy of the muscles, it is not surprising if he be accused of wishing to appropriate the whole range of medical and physical sciences, but:

"Pallas eximium pectore fovit opus,
Morbos et causas, dixit, Quid, Quantum, Ubi, Quando,
Quomodo materias continet istud opus."

T. P. CORBALLY.

MENU.

The Bread Mixer, or Kneading Machine.—A recent French invention represented by this cut, is one of the most pleasingly suggestive devices of modern household conveniences. To any one who has ever visited a bakery, and observed the workers in the kneading troughs, with sleeves rolled to the shoulders, and reeking with perspiration at every pore, fresh rolls, though never so white, excite very unpleasant reflections. Differing only in degree is the custom of the kitchen in every household; insomuch that whether the bread or pastry, as the case may be, be home-made or served at the door, the shortening is by no means confined to butter. The machine here represented is *the* remedy for all such unpleasant reflections. It is manufactured in various sizes, adapted to the household, hotel and bakery. Lalange & Grosjean Mfg. Co., 19 Cliff St., New York.

Self-Raising Flour.—Editor of THE SANITARIAN—DEAR SIR :—I have used Hecker's Self-Raising Buckwheat in my family for many years with great satisfaction. It makes excellent cakes, light, and of fine flavor. It is advertised as being perfectly healthful, and also that dyspeptics may use it without detriment. It is rather difficult to reconcile this with an advertisement under the title of "Buckwheat Cakes," which was published in the New York *Tribune*, Nov. 5th, a part of which I copy:

"Various preparations and mixtures have been put on the market from time to time to take the place of the 'Royal Baking Powder,' such as 'self-raising' or 'griddle-cake' flours, but analysis shows many of them to be made from unwholesome substitutes and strong acids, which have a corroding effect on the membranes of the stomach. It is much safer for all consumers to purchase flour themselves that they know to be good and reliable, and add the baking powder, at a considerable saving, than to purchase any of the so-called 'self-raising' flours, which are usually compounds of the vilest nature, containing alum or phosphates. It is stated that three-fourths of the 'self-raising buckwheat' sold in the market is nothing more than 'middlings,' or the dark-colored siftings and impurities which form the refuse in the manufacture of the higher grades of flour."

Can you give me any information? As Hecker & Co. are the only parties using the words "Self-Raising," and "Griddle Cake," is the above intended to describe their preparations? I have read with great interest your article recently published on the subject of Buckwheat, and not wishing to lose relish for my morning cakes, I come to you for information. JAMES WARREN, 154 Tompkins Ave., Brooklyn.
Nov. 7, 1881.

The question of our correspondent resolves itself into the difference in the composition of baking powders, and the substances used for giving the "self-raising" property to flour in bulk. Being the same,

and used in the same proportions, there would be no difference in the effect. But they are not the same. Baking powders, at best, consist of *pure* cream of tartar and bicarbonate of soda, with just enough of flour or starch to make these two substances conveniently miscible. The action of the cream of tartar on the soda, on being dissolved in the dough, is to set free carbonic acid with its lightening effect on the bread. But the result of the decomposition of the salts is the formation of tartrate of potash or *Rochelle salt*, a substance which is wholly foreign to the tissues and liquids of the body, and has to be eliminated; and under some circumstances, if used in excess, as baking powders often are, it is liable to do harm. "Self-raising" flour, on the other hand, is so made, we are informed, by the addition and thorough mixing of acid phosphate of lime and bicarbonate of soda. The reaction of these substances in setting free carbonic acid is the same as in cream of tartar and soda, but the resultant salt is vastly different. The phosphate of lime in its relation to the human organism is of the utmost importance in nutritive value—"ranks next to water"—and without it health cannot be sustained. Equally necessary are the phosphate and soda salts for the growth of all corn plants. Nearly fifty years ago the suggestion was first made by Liebig, we believe, that the phosphates be added to refined flour to make amends for those of which it was deprived in the process of refining. He is well known to have been among the most energetic advocates of "whole-wheat" flour, on the ground of its containing the phosphate and soda salts in their natural relation. But more recent authorities hold that while wheaten flour in the process of refining may be deprived of its saline and mineral constituents in their natural relation, the ordinary omnivorous habits of man obtain those constituents from other sources: from plants and the flesh of animals—commonly fed upon the rejected portions, straw and husks, and ashes. While, therefore, it cannot be claimed that it is necessary to add the phosphate and soda salts to refined flour, it is perfectly clear that they may be added with benefit. Three phosphates of lime—*tricalcic, dicalcic and monocalcic*—only, are known to chemists, and they all exist in and are requisite to the healthy human body. Of sodium phosphates, as of the calcium, there are also three, and these, too, are essential in one way or another as nutritives, and find their way into the system in the composition of, or in addition to other articles of food. *These substances* added to flour, therefore, in the small proportion necessary to render it self-raising, are calculated rather to contribute to than to detract from its wholesomeness; and there is no condition to which the digestive organs are liable in which they could possibly be injurious.

Editor's Table.

THE SANITARIAN with this number concludes its ninth volume, with an index to the whole series, and an additional prospectus. In inviting special attention to this INDEX, we risk nothing in stating that it presents the most complete catalogue of distinguished contributors on sanitary subjects and papers on practical sanitation extant. The specially new features, beginning with this number, are AN ENLARGEMENT OF SIXTEEN PAGES reading-matter and an illustrated page of RECENT SANITARY PATENTS, monthly, with brief descriptions.

The favor with which THE SANITARIAN was received at the outset, and the generous patronage with which it was sustained through its first few years, beginning in 1873, which so sorely tried all new enterprises, is the guaranty upon which this increase of effort is based, to satisfy the growing appreciation of sanitary science. And it affords us great gratification to again express sincere thanks for the continuous and increasing patronage. As in the past, THE SANITARIAN will continue to be conducted in a wholly independent manner. Its resources in material have greatly increased; the public at large, as well as physicians, engineers, architects and trades, are daily growing more and more alive to the importance of sanitary knowledge; and the day is not distant, we opine, when the medical and other colleges, and the public schools throughout the country, will give to hygiene the recognition which it so eminently merits.

SUBSCRIPTION ORDERS are herewith inclosed for the convenience of subscribers, who, we trust, will not only promptly avail themselves of them, but, as they know the value of THE SANITARIAN, that they will *each one add* some friend's name and double the amount of remittance, or secure a new subscriber. Physicians in general practice, especially, we know, are daily becoming acquainted with dangerous conditions to their patients, which may be suggestively corrected by this means more delicately and more effectually than in any other way. The enlargement will afford additional opportunity for the discussion of domestic hygiene and increasing the value of THE SANITARIAN to the household.

A. N. BELL, M. D., *Editor and Proprietor.*

The American Public Health Association will hold its Ninth Annual Session at Savannah, Ga., commencing Tuesday, Nov. 29, 1881, and ending Friday, Dec. 2, 1881.

Papers are announced on The Relative Prevalence of Trichinæ, Texas Cattle Fever, Railroad Sanitation, Color Blindness in Public Service, Intermittent Fever in New England, A Permanent International Sanitary Commission, The Removal of Garbage and Excreta, Pollution of Water, etc., etc., with Reports of Committees on the Prevention of Venereal Diseases, Statistics, Compulsory Vaccination, The Management of Epidemics, A National Museum of Hygiene, etc., etc.

The special subjects suggested by the Executive Committee as prominently worthy of discussion at this session, in addition to those connected with the papers above named, are :

Diseases of Domestic Food Animals, Malaria, School Hygiene, Registration of Vital Statistics, Alimentation with reference to the Prevention of Disease, The Use of Tobacco by Youths, and The Sanitary Drainage of Seaboard Swamps.

State Boards of Health—Current Work.

California reports for September twenty cities and towns, showing a total mortality of 423, the annual death rate per 1,000 being 15.13. August gave a total mortality from 26 localities of 469, and a death rate of 15.84.

A considerable increase in the deaths by consumption is noticeable. In August this disease occasioned 12.79 per cent. of the total mortality, while in September the percentage rises to 19.14. The increase is mainly made up by the interior valleys of the State, with the cities of Sacramento, Marysville and Los Angeles, and by San Jose, which, in the classification adopted, is considered to belong to the coast valleys. The result is in accordance with what is commonly observed as the rainy season approaches, with its humid atmosphere, and chilly nights and mornings. To this same cause is doubtless to be ascribed the increase in mortality, by the inflammatory affections of the pulmonary organs.

On the other hand, we find a decidedly diminished mortality from the Fevers—Typhoid, Typho-Malarial, and Intermittent. August was responsible for 18 deaths by this class, or 3.83 per cent. of the total, while September shows only 9 deaths, the percentage being 2.12. Small-pox, at latest accounts, has appeared at several distant points, and is creating some alarm.

Diphtheria has increased, so far as it is represented by the mortality, from 2 in August to 6 in September ; and cerebro-spinal fever from 2 to 9.

Connecticut reports for September decided decrease in mortality as compared with the preceding month, but an increase from malarial disorders.

New Haven shows the greatest mortality from malarial diseases this month—twelve in all. The protracted drouth doubtless has been an efficient factor in causing the increased prevalence. The greatest is at Thompsonville, where nearly a hundred cases occurred almost simultaneously. There is no exemption from age. Even infants are attacked in many places. The attendance at school is more or less interfered with by the recurring chills. Fairfield, where considerable attention to drainage has been paid, reports a few cases through the drought, but much less than in former years; while for the present, New Milford, where systematic drainage has been done, is reported as entirely free from malarial diseases for the present at least.

Diphtheria, which has appeared in Hartford, has steadily increased during the last two months, the mortality, though not large, creeping up a little each month, one, three, four, five—the figures for the last four months—has during October become quite prevalent in a limited part of the city.

Scarlet fever has also increased in frequency this month. It is reported as quite frequent in Derby, Salisbury and New Canaan, although in neither place anything like an epidemic, from three to six cases at most.

Cerebro spinal meningitis is quite prevalent in Bridgeport as shown by the mortality, also in Derby, where four new cases are reported in August.

Typhoid fever in places where malarial diseases are not prevalent is reported as unusually frequent thus early in the season.

ILLINOIS.—Since the date of the report on other pages in this number, small-pox has made its appearance at several new points in the State, as well as in the neighboring States of Indiana, Iowa and Missouri, and in one locality in Minnesota. The Secretary of the Board, Dr. Rauch, writes us that, as he had already forshadowed in the report alluded to, the diffusion of the disease is mainly confined to the lines of immigrant travel, and to the localities where immigrants are settling in large numbers. It is increasing in the large centres of population, which are the distributing points for immigrants, but thus far, owing to the unusually mild weather, has not extended southwardly so rapidly as was anticipated; and as there is reason to apprehend it will as the temperature falls. There is much excitement over the outbreaks, which are described as "very malignant," in Bellevue, Iowa, and in Stearns County, Minnesota. The Board has issued a very comprehensive and practical circular of instructions—"How to Prevent the Spread of Small-Pox"—and successful work is being done in "stamping out" the disease.

There is a strong argument to be found in this visitation upon our great interior population for a supervision by the general Government of the whole subject of maritime quarantine. Small-pox epidemics in the interior appear to keep pace, *pari passu*, with the increase and decrease of immigration; and not until there is an efficient inspection and proper precautions enforced on the seaboard can the disease be controlled inland. The subject is one well worthy the attention of our legislators.

MICHIGAN.—The regular quarterly meeting of this Board was held October 11, 1881. An interesting feature was a report by the Secretary relative to work of other State Boards. He desires to continue to receive information from other Boards by which these reports may be made quarterly.

A report relative to work of Local Boards of Health showed increased activity on the part of local health authorities in the way of isolating those infected with communicable diseases and enforcing the law requiring from householders and physicians notices of such diseases. In one city a physician had been fined $100 for not reporting cases of diphtheria. The revised document on the restriction and prevention of Scarlet Fever was adopted, and ordered published in English, Dutch and German. The consideration of this document involved a discussion of the question of recommending health officers to verify diagnosis of reported cases of diseases dangerous to the public health.

A circular giving general rules for the prevention of diphtheria, scarlet fever, and small-pox was adopted. Forms were adopted for annual reports by health officers and clerks of local boards, and by regular correspondents of the Board.

Dr. Avery, of Greenville, was requested to visit the overflowed district along the Maple River, in Gratiot County, and report to the Board.

Dr. Lyster, of Detroit, read a paper on Syphilis in its relations to the public health. It dealt with the facts of the frequent communication of the contagium of syphilis, by direct and by indirect means, to innocent persons; also with the serious effect, on individuals, and on the offspring of marriages where one of the parents is thus blighted.

Dr. Kellogg read a paper on the Relations of Preventable Sickness to Taxation, showing by the reports of the Board of Correction and Charities, the abstracts of reports of County Superintendents of the Poor, the abstracts of statistical information relating to the insane, and the deaf, dumb, and blind, and the Vital Statistic reports, that more than 3,000 persons in Michigan are annually dependent on the State for support, to a greater or less extent, in consequence of

diseases preventable by the adoption of proper sanitary measures. The cost to the people of the State for the support of these persons is over $40,000 annually, a portion of which is paid by every tax-payer. This is but a small part of the actual loss to the State. The number of deaths from preventable sickness in 1880 (*estimated* from returns by supervisors and assessors) was 4,585. Placing the value to the State of each human being at the low estimate of $1,000, the aggregate loss by deaths from preventable sickness is over $4,500,000. But to this must be added a further loss from sickness which did not terminate fatally. The statistics of the benefit societies of England show that for every person who dies two persons (on the average) are sick throughout the year. This indicates a total annual loss of time from preventable illness on the part of more than 9,000 persons, to which should be added the expense of living, etc., certainly more than $1,000,000. This gives about $5,666,000 as the total loss to this State from diseases generally conceded to be preventable. Estimating the loss in other States in the same ratio to the population, the aggregate loss to the whole United States is not less than three hundred million dollars annually, an amount which would pay the National debt in six years.

The Secretary was directed to issue a weekly bulletin of sickness in Michigan for such papers and medical journals as will publish it. Also to procure the services of an architect in the preparation of a circular on Hospitals for Communicable Diseases.

Dr. Kellogg reported on the subject of criminal abortion. He and Dr. Hazlewood were requested to prepare a circular designed to collect facts on this subject.

New Hampshire State Board has been organized as follows: Governor, Charles H. Bell; Attorney-General, Mason W. Tappan; Granville P. Conn, M.D., Carl H. Horsch, M.D., Irvin A. Watson, M. D.; President, Granville P. Conn, M.D.; Secretary, Irvin A. Watson, M.D. Office of the Board, State House, Concord, N. H.

Rhode Island State Board of Health Report for 1880, pp. 292, comprises the Annual Report of the Secretary, the statistics of births, marriages and deaths for 1879, with extended comments and comparisons; a record of the proceedings of the board, and an account of the work performed under its directions. While there was no widespread epidemic during the year, there were in several localities severe visitations of scarlatina and diphtheria; cholera infantum was more prevalent than for several preceding years, and acute lung diseases unusually prevalent and of more than average fatality. Intermittent fever is reported as of increased prev-

alence in several localities. A sudden outbreak in Barrington is of special interest, as illustrating its artificial origin by the accumulation of vegetable matter in process of decomposition, and stagnant water in beds of clay.

Of Vital Statistics.—The number of *births* to population in 1879, according to census of 1880, was one to every 42, as against one to every 38.5 in the report for 1878—based on the census of 1875. Of the whole number of births in 1879—6,350—2,767 were of American parentage, 2,573 foreign, and 1,010 mixed. For a period of four years, 1876 to 1879, inclusive, the numbers for the years severally were: American, 2,585, 2,665, 2,887 and 2,767; Foreign, 2,873, 2,642, 2,848 and 2,573; Mixed, 871, 928, 979 and 1,010; and for a period of 22 years, from 1858 to 1879, inclusive, the births of children in the class of mixed parentage—that is, of American father and foreign mother, and *vice versa*—increased from 7.17 to 15.90 per cent.; showing that the sentiment of class prejudice has been gradually lessening.

Marriages, as compared with the returns of 1878, show a small increase, but as compared with each of several years previous to 1876, a considerable falling off. In 1873 the proportion of persons married, to the population, was one in every 41.3; in 1879, one in every 57.8. "It is probable the year 1880 will show a more largely increased proportion over that of 1879 than that for several years previous."

Divorces have increased from an average of one in every 13.7 marriages for ten years previous, to one in 9.7 for the year 1879; showing, as the secretary remarks—"a lamentable misapprehension of the obligations assumed in the marriage contract."

Deaths recorded for the year 1879, 4,472; 31 more than for 1878, and 22 more than for any preceding year, the rate being 16.2 per 1,000, against 17.2 for the preceding year. But this small difference is attributed to the basis of comparison, the estimate for 1878 being based on the census of 1875, and that of 1879 on the census of 1880. "In reality, the rate of mortality in the State during the last six years has not varied fourteen-hundredths of one per cent."

The average age of decedents for the year 1879 throughout the State was, of males, 31.29 years, females, 33.24. The highest average in any town in the State was, of males, 71.9 in Charlestown; of females, 71.7 in Foster. The lowest of males, 5.5 in West Greenwich; females, 1 year, in Jamestown. In Providence the average age of decedents was, of males in 1879, 28; in 1878, 24.2; females in 1879, 29.5; 1878, 27.9. Ratio per 1,000, 19.3. Of the causes of death, consumption killed 637, one in 7, or 15.98 per cent. of the total number from all causes; pneumonia and congestion of the lungs, 311, 7.4 per cent. For a period of 20 years, 1860-1879, the average per-

centage of deaths from consumption has been 16.84; of deaths from pneumonia and congestion of the lungs, for 15 years, 6.4 per cent.; for the year 1879 the percentage was 7.4. Typhoid fever killed 114 —36 less than in 1878. "The percentage of mortality from fevers in 1879 in proportion to all known causes of death was less than the average of fifteen years, and . . . . than in any year since 1869."

The difference in the vital statistics between the white and the *Colored population* in 1879 (6,271, census of 1875) was

White: One birth in every 44.7; one married in every 59.2; one death in every 64.3. Colored: One birth in every 39.6; one married in every 51.4; one death in every 37.3.

In a period of nineteen years, the excess of births over deaths among the colored population is only 33.

The Medical Correspondence of the Board, based upon a well arranged categorical circular by the Secretary, represents an intelligent and comprehensive view of the relations of disease to local conditions throughout the State. But throughout there is manifest a lamentable degree of obtuseness or ignorance on the part of the civic authorities—even greater than among the public at large—of the general causes of disease and measures for their prevention. In a few localities the public has become restive and urgent for sanitary measures. Of Little Compton, Dr. I. B. Cowen reports: "From the appearances in my daily rides, I can judge very truly that people here think and act more sensibly in a sanitary point of view. The slop-bucket is not emptied so frequently by the side of the well. . . . No regulations or work of public nature of any consequence by the town council or any health officer, in relation to the promotion of the public health." The ratio of death to population in this town was 12 per 1,000. Of Tiverton, Dr. E. P. Stinson reports: "The people of this town with but few exceptions are not specially informed in sanitary improvements." Ratio of deaths to population, 15.12 per 1,000. Of Johnston, North Providence and Smithfield, Drs. J. C. Budlone and C. A. Barnard report: "There seems to have been some advance in the public sentiment in regard to the importance of sanitary surroundings and means of preventing diseases." The ratio of death to population in these towns was 7.9 per 1,000. Of Newport, Dr. F. H. Rankin reports: "The inefficient manner in which the health ordinances are enforced, and the countenancing by the city officials of certain nuisances, has excited a lively interest among the citizens of Newport, and created a demand for the establishment of a board of health for the city." The ratio of deaths to population was 16.8 per 1,000. In this city Mayor Burdick, in one of the latest of his official communications to the Common Council, just before going out of

office in 1880, and Mayor Slocum, his successor, in his inaugural, June 7, following, are both quoted in their recognition of dangerous nuisances, and urgent appeals for the adoption of efficient sanitary measures, the pressing necessities being an abundant supply of pure water and sewerage works.

The Sanitary Protection Association of Newport is also referred to in complimentary terms, for the excellent work it has done in rousing public attention to prevailing unsanitary conditions.

The city of Providence stands alone in the State in having entered upon the execution of an intelligent system of measures for the protection of the public health, as a co-ordinate part of the city government.

The Cattle Commission duties, which were devolved upon the Secretary of the State Board of Health on its establishment, the Secretary reports, have occupied more than half of his working time. Equine catarrhal influenza or "epizootic" among horses, has been the only largely prevalent disease affecting domestic animals. Spinal meningitis among horses has prevailed in some sections of the State, and with more than usual severity. Much time has been devoted to the investigation of suspected pleuro-pneumonia, without foundation. Of glanders, there have been 49 cases, 32 of which were in Providence; but several of these belonged in other towns.

Hoose, or lung worm disease, broke out in October for the first time in the State, in a herd of cattle in the town of Cumberland, and was at first supposed to be pleuro-pneumonia. The cattle were said to have come from New York. The nature of the disease is suggested by its name. "Upon cutting through the large bronchiæ we found a large number of thread-like worms, from ¾ of an inch to 1½ inches in length, and in knots or masses. These were immersed in frothy mucus, which seemed to fill the air passages completely." The cattle were quarantined; and the inhalation of the fumes of sulphur appears to have been efficient, both as a means of treatment and prevention.

Heredity.—A special paper by Miss A. E. Tyng, M.D., is a pretty good summary of the generally accepted truths on this subject, but contains nothing new.

House Drainage, by the Secretary, is an instructive illustrated paper, well adapted to use as a circular, which should be made of it, and distributed to every household in the State.

The registration and other sanitary laws are appended to the report.

The report, taken altogether, is instructive, shows great industry on the part of the Secretary, and praiseworthy interest on the part of his associates, and other voluntary collaborators throughout the State.

Wisconsin State Board of Health Report for 1880, page 210, opens with a sketch of the progress of the work of the Board for the year, the general health of the State, the prevalence of diphtheria, scarlet fever and typhoid fever, the urgent necessity of vaccination against the threatening aspect of small-pox and the dangers of illuminating oils. Following this the Secretary reports upon the progress of sanitation in the State in detail, beginning with the successful effort of the Board in securing an effective law governing the sale of illuminating oils, under the practical operation of which kerosene explosions in the State seem to have entirely ceased.

Of vital statistics, as collected under existing laws, they are pronounced somewhat costly—for the year 1879, as ascertainable, $10,926.70—and worthless for any sanitary or scientific purposes. Increasing interest and encouraging progress is reported in the number and fullness of the clerical reports of the local Boards of Health throughout the State, brought about by the admirably formulate circulars sent to them by the Secretary of the Board. The number of such reports for the year was 853, representing every county in the State; and twenty counties represent every town.

Preventable Diseases.—The amount of sickness and death from six specified preventable diseases in the 858 cities and towns reported, representing an area equal to about eight-ninths of the State, is lucidly represented in the following table:

	Small Pox.	Diphtheria.	Scarlet Fever.	Typhoid Fever.	Measles.	Whooping Cough.
Whole number of towns reporting.....	3	51	265	298	274	298
Probable number of cases.....	9	8,878	3,225	1,549	4,065	5,406
Probable number of deaths.....	2	1,780	390	320	69	95

Of the whole number of towns reported, 175 have been entirely free from the diseases named in the table; 224 have been visited by some one of them; 189 have suffered from the presence of two; 150 from three; 71 from four, and 30 from five. No single place has been visited by the whole six. Diphtheria has continued to maintain its pre-eminence, notwithstanding the pains taken to disseminate knowledge to the utmost extent—the requisite for its prevention. One correspondent reported to the Secretary: "There have been several cases of diphtheria in a public institution here, brought in from outside, but not a single additional person was affected. The means used to bring about this most desirable result were *general*

cleanliness, a liberal use of disinfectants and CAREFUL ISOLATION OF EVERY PATIENT."

A careful computation of the cost of the six preventable diseases given in the table, for the year, on data furnished by correspondents of the Board, shows the cost of the cases ending favorably to have been $2,060,982; those ending fatally, $345,625—$2,406,607; an "amount," the Secretary remarks, "exceeding the sums expended in Wisconsin during the same year for building and repairing school-houses, school furniture, registers and records, apparatus and libraries, teachers' salaries and all other purposes connected with the schools and educational institutions of the State, by more than a quarter of a million of dollars."

Of other prevalent diseases, consumption and other pulmonary disorders are reported to an unusual extent, some correspondents expressing a fear that changing conditions of climate were operating to cause an increase. Sixty-eight correspondents mention malarial diseases as being uncommonly frequent. Thirty-six report diarrhœa and dysentery in their respective localities. Regret is expressed that so few townships appreciate the necessity of Local Boards of Health; and this, too, in the face of appalling conditions, and, frequently, sad afflictions. In this connection two brief notes attached to reports coming from the same town in two successive years are quoted. "1879:—A Board of Health is needless; the town is too healthy to require any." "1880:—A Board of Health has been found highly necessary to check the spread of diphtheria."

Forty pages of extracts from special correspondence show a wide-spread interest in the work of the Board, which will be sure ere long to rouse the citizens of the State to a just appreciation of the importance of Boards of Health as means of public economy, as well as the protection of the public health.

General Hygienic Knowledge a Necessity for the People, by H. P. Strong, M. D.; Recreation as a Sanitary Agent, by Rev. J. W. Hageman; School Hygiene, and What the Teacher can Do to Promote It, by Professor T. W. Chittenden; Management of Contagious Diseases in the City of Milwaukee, by O. W. Wight, M. D.; Diseased Meat, by H. P. Wenzel, M. D., and Kerosene, by J. T. Reeve, M. D., are all educational papers of value, eminently worthy of extensive circulation among the people.

Malaria in the White House.—The unfortunate condition of things in the plumbing arrangement, which has so long existed in the Executive Mansion at Washington, is now being remedied by the introduction of the superior sanitary appliances of the Myers Sanitary Depot, 94 Beekman Street, New York.

Cincinnati Fourteenth Annual Report of the Health Department, for the year 1880, reports: *Births* registered, 7,945; *marriages*, 1,781; *deaths* (exclusive of 369 still births), 4,808. The chief causes of death were: Consumption, 720; pneumonia and other lung diseases, 697; diarrhœal diseases, 430; typhoid fever, 178; scarlet fever, 134; diphtheria, 103; measles, 103. Total zymotic diseases, 1,281. Of the total number from all causes, 2,192, or 42.35 per cent., were of children under five years of age. Ratio per 1000 of population (255,708, census of 1880), 18.8—as measured by the mortality, one of the healthiest cities of its size in the world; notwithstanding, the proportion of deaths of children, and of deaths from preventable diseases in general, to the whole number, is very large. Conditions accounted for by, and probably attributable to, the impurity of the drinking water, which, under the pressure and energy of the health officers in exposing and remedying it, will doubtless ere long be effectually overcome, and go far toward lessening the proportion of zymotic diseases and premature deaths.

Richmond, Va., Board of Health Report for 1880, reports:

Population, 65,000—white, 38,200; colored, 26,800. *Births* registered (incomplete), 1880—white, 926, colored, 954. Still-births, 171—white, 54; colored, 117. *Marriages*, 573—white, 313; colored, 260; *Deaths*, 1750—whites, 741; colored, 1,009. Rate of mortality of whole population, 26.90—white, 19.36; colored, 37.64. The chief causes of death were: Consumption, 288—105 white, 183 colored; diarrhœal diseases, 176—white, 83, colored, 93; convulsions, 77—white, 21, colored, 56; typhoid fever, 39—white, 22, colored, 17; acute lung diseases, 129—white, 46, colored, 83. Of the total number of deaths from all causes, 788—white 301, colored, 487, were under five years of age. The chief causes of insalubrity urged upon the city authorities are excessive moisture, filthy soil, bad drainage, leaky privies, and, in part, polluted water—from wells and springs still permitted. The water from the water works is believed to be pure, but it is not yet available for the whole population. An *abattoir* in the outskirts of the city is also urged as an important sanitary improvement upon the slaughter houses now scattered through the city, befouling the soil and air, and adding to the death rate.

Several Cases of Malarial Disease have been reported in the vicinity of Boston, two being near the banks of Fresh Pond, a natural lake which furnishes the water supply for the city of Cambridge. The others have been in river valleys at a somewhat greater distance. As in so many other instances the infection is at-

tributed to the neighborhood of mill-dams, which cause frequent fluctuations in the water-level, exposing the margins to the action of the sun. At Fresh Pond, although the circumstances are somewhat different, the large consumption of water in the city often exhausts the supply so far as to leave a considerable portion of the bottom bare. The outbreak is not to be attributed to any contamination of the water, for the pond is kept from pollution with great care, and it has before been observed that the rivers running through some of the most malarious valleys in the State are pure mountainous torrents. That a change of level in the more stagnant portions is the most important factor in such cases is beyond doubt. Years ago it was a tradition among physicians that all the cases of ague which ever appeared in Massachusetts had occurred upon the draining of neighboring mill-ponds, and whether the relation is one of cause and effect or not, the connection of the two things still continues almost invariable. As usually happens towards the close of the summer season, typhoid fever, as we learn from the Boston *Herald*, has been very prevalent, particularly near the seashore. At Nahant, a rocky watering place on the north shore of Boston harbor, there have been some thirty cases. We have before pointed out that the summer villages which crowd the granite promontories of Massachusetts Bay are most unfavorably situated for permanent healthfulness. The impermeability of the subsoil prevents the diffusion of household waste through it, and they escape by the narrow seams in the ledge, which are too apt to be also the water-bearing veins which supply the wells of the neighborhood. In this way the typhoid or choleraic infection, once introduced, may spread with fearful rapidity, as has been repeatedly demonstrated in England.—*American Architect and Building News.*

How Printing Affects the Health.—Years ago there was a notion prevalent among those who were but partially informed upon the question, that the printing business was essentially detrimental to health. There was a tradition about the absorption of poison from the constitutents of which type metal was composed. This was and is true in so far as it asserts the poisonous nature of some of the constituent parts of type metal; but that these poisons should necessarily be absorbed into the system of one who handles type is simply absurd. Printers who have such habits of cleanliness and sobriety, as a decent respect for one's self and the opinion of others might be expected to dictate, may follow their calling for years without experiencing any further damaging effects upon their health than what will result from close application to any sort of hard work. More "poison" is absorbed by the printer when taking observations of his little finger through the bottom of a glass than in any other way.—*The Chicago Specimen.*

Mortality Statistics in the U. S., of Cities of 30,000 Population and Upwards.—Population, total number of deaths, number under five years of age, death-rate per 1,000, and prevailing causes of death for week ending October 15, 1881. **Abbreviations:** c, consumption; a l d, acute lung diseases; s f, scarlet fever; ms, measles; w c, whooping cough; d-c, diphtheria and croup; t f, typhoid and typhus fevers; s p, small pox; y f, yellow fever; ch, cholera; dl d, diarrhœal diseases; ml f, malarial fever; c.d, contagious diseases.

Atlanta, Ga., 37,421: 27; 14; 37.1.—t f, 8; dl d, 7.
Baltimore, Md., 332,190: 161; 85; 25.2.—d-c, 24; t f, 5; ml f, 2.
Boston, Mass., 362,535: 188; 77; 27.1.—c, 35; dl d, 25; d-c, 17; t f, 5.
Brooklyn, N. Y., 566,689: 296; 145; 28.3.—dl d, 32; d-c, 24; ml f, 9; tf, 5.
Buffalo, N. Y., 155,137: 118; 64; 39.6.—dl d, 31; d c, 16; tf, 7.
Cambridge, Mass., 52,800: 28; 8; 28.5.—
Camden, N. J., 41,658: 24; 8; 30.0.—
Charleston, S. C., 49,990: 31; 11; 34.3.—
Chicago, Ill., 503,304: 240; 101; 24.9.—s p, 35; t f, 31; d c, 21.
Cincinnati, O., 255,708: 107; 50; 21.8.—s p, 2; d-c, 5.
Cleveland, O., 160,140: 92; —; 30.0.—t f, 13.
Dayton, O., 38,677: 17; 5; 22.8.—
Dis. Columbia, 180,000: 95; 39; 27.4.—ml f, 5; t f, 5.
Evansville, Ind., 29,280: 11; 6; 19.6.—
Fall River, Mass., 49,000: 31; 16; 33.0.—c, 5.
Hudson Co., N. J., 187,950: 96; 43; 26.6.—tf, 6; s p, 4.
Indianapolis, Ind., 75,074: 26; 12; 18.1.—
Kansas City, Mo., 60,000:
Lawrence, Mass., 39,178:
Louisville, Ky., 123,625: 62; 23; 26.2.—tf, 7; d-c, 3.
Lowell, Mass., 59,485: 24; 11; 21.0.—
Lynn, Mass., 38,284: 14; 3; 19.1.—
Memphis, Tenn., 33,593: (Oct. 8) 23; 15; 35.7.—
Milwaukee, 115,578: 62; —; 27.9.—
Mobile, Ala., 31,205: 18; 2; 30.1.—
Nashville, 43,461: 30; 15; 36.0.—dl d, 7; ml f, 2.
Newark, N. J., 136,400: 67; 29; 25.6.—d-c, 13; tf, 3; ml f, 2.
New Haven, Conn., 62,882: 23; 4; 19.1.—
New Orleans, La., 216,140: 90; 26; 21.6.—ml f, 5.
New York, 1,206,577: 690; 295; 29.8.—d-c, 61; t f, 19; s f, 28; ml f, 19; s p, 4.
Omaha, Neb., 30,518: 8; 5; 13.7.—
Philadelphia, Pa., 846,980: 339; 106; 20.9.—t f, 19; s p, 11.
Pittsburg, Pa., 156,381: 87; 39; 29.1.—t f, 5; s p, 22.
Portland, Me., 33,810: 11; 4; 17.0.—
Providence, R. I., 104,852: 41; 18; 20.4.—
Richmond, Va., 63,803: 41; 18; 33.5.—s p, 8.
Rochester, N. Y., 89,363:
Saint Paul, Minn., 41,498:
San Francisco, Cal., 233,956: 72; 15; 16.1.—
Savannah, Ga., 30,681: 25; 14; 42.5.—d-c, 4.
Springfield, Mass., 33,340: 13; 3; 20.3.—
St. Louis, Mo., 350,522: 149; 66; 22.2.—t f 6; ml f, 10.
Utica, N. Y., 33,913:
Wilmington, Del., 42,499: 34; 10; 43.2.—tf, 5; s p, 5.
Worcester, Mass., 58,295: 18; 6; 16.1.

Foreign.—Total number of deaths, ratio per 1,000, and number of deaths from prevailing causes at latest weekly returns received.

Alexandria, Egypt, 212,034, Sept. 17, 199; 48.8.—t f, 12.
Amsterdam, Holland, 326,203, Sept. 24, 125; 19.9.—
Antwerp, Belgium, 179,034:
Barcelona, Spain, 260,000, Sept. 24, 134; 26.8.—t f, 10.
Belfast, Ireland, 207,671, Oct. 1, 88; 22.0.—t f, 2.
Berlin, Germany, 1,123,577, Sept. 24, 509; 23.6.—t f, 10.
Birmingham, England, 402,296, Oct. 1, 138; 17.9.—
Bombay, India, 644,535, Sept. 6, 428; 28.8.—ch, 14.
Bremen, Germany, 114,000, Sept. 24, 38; 17.3.—
Breslau, Germany, 273,000, Oct. 1, 146; 27.8.—
Bristol and Clifton, England, 217,185, Oct. 1, 75; 18.9.—
Brussels, Belgium, 165,366, Oct. 1, 63; 19.9.—
Bucharest, Roumania, 200,000, Sept. 24, 75; 19.5.—
Buda-Pesth, Hungary, 370,370, Sept. 24, 221; 31.10.—s p, 5; t f, 3; s f, 10.
Calcutta, India, 429,535, Aug. 27, 199; 24.1.—t f, 65; ch, 16.
Christiania, Norway, 120,000, Oct. 1, 31; 13.4.—
Copenhagen, Denmark, 235,254, Sept. 27, 92; 20.3.—
Dresden, Saxony, 220,216, Sept. 24, 89; 21.0.—
Dublin, Ireland, 348,525, Oct. 1, 114; 17.0.—t f, 4.
Edinburgh, 229,030, Oct. 1, 75; 17.0.—
Genoa, Italy, 180,625, mo. of May, 399; 26.5.—s f, 21; t f, 6.
Glasgow, Scotland, 512,034, Oct. 1, 179; 18.2.—d-c, 8.
Havana, Cuba, 195,437, Oct. 8, 133; 35.5.—y f, 12; s p, 2; t f, 4.
Lisbon, Portugal, 203,681, Sept. 3, 129; 32.9.—
Liverpool, England, 553,988, Oct. 1, 241; 22.7.—ms, 16.
London, 3,829,751, Oct. 1, 1,217; 16.6.—s p, 15; t f, 52; s f, 55.
Lyons, France, 342,815, Sept. 24, 161; 20.8.—
Madras, India, 397,552:
Malaga, Spain, 115,882, Sept. 25, 73; 32.8.—
Montreal, Canada, 140,000:
Munich, Germany, 230,000: Sept. 24, 118; 26.7.—
Paris, France, 1,988,806, Sept. 29, 832; 21.8.—s p, 4; t f, 21.
Rio de Janeiro, Brazil, 335,000:
Rome, Italy, 305,469, Aug. 6, 172; 29.3.—*fevers*, 3.
Stockholm, Sweden, 169,429, Sept. 24, 60; 18.6.—
St. Petersburg, Rus., 669,741, Oct. 1, 566; 43.9.—t f, 52; s p, 3.
Trieste, Austria, 128,295, Oct. 1, 82; 29.9.—
Turin, Italy, 236,658, Sep. 10, 106; 22.9.—t f, 5.
Venice, Italy, 141,615:
Vienna, Austria, 731,191, Oct. 1, 338; 24.0.—
Warsaw, Rus. Poland, 357,169:

The six healthiest cities in the United States, as measured by the above and most recent authentic reports, up to the time of going to press with this number, were, in the order named:

OMAHA, SAN FRANCISCO, WORCESTER, PORTLAND, INDIANAPOLIS and NEW HAVEN.

The Six Unhealthiest were:

WILMINGTON, SAVANNAH, BUFFALO, ATLANTA, NASHVILLE and MEMPHIS.

The Six Unhealthiest in the World were:

ALEXANDRIA, ST. PETERSBURG, WILMINGTON, SAVANNAH, BUFFALO and ATLANTA.

Literature.

Index Medicus occupies the first place in periodical medical literature in usefulness to busy practitioners as well as writers, because it is an index to all current medical literature and collateral sciences; and no physician who would be *au courant* with the literature of his profession, can afford to be without it. $6 a year. New York: F. Leypoldt.

The Physician's Hand-Book, by Drs. William, and Albert D. Elmer, repeats its twenty-fifth year of publication. It is hardly necessary to add that the authors have greatly profited by this long experience; that the result is a wonderful condensation of the every-day wants of the medical practitioner, both in the matter of memoranda and facility of record. It is unquestionably the most complete work of its kind extant. New York: W. A. Townsend.

The Medical Record Visiting List is a very handsome and concise pocket record and reference book. It possesses the special merit of compactness, while it contains all essential memoranda and rulings necessary for the busy practitioner. New York: Wm. Wood & Co.

Proceedings of the Connecticut Medical Society, 1881.—Nineteenth Annual Convention, held at Hartford, May 25th and 26th. 8vo, pp. 246. In the absence of the President, Dr. G. L. Platt, in Europe, the opening address was made by the Vice President—informal, because unexpected, and limited to a consideration of the importance of the Reports and other subjects to be brought before the Convention. The report on *Medical Expert Testimony*, by Drs. Gurdon W. Russell, Stephen G. Hubbard and Wm. Deming, is a well considered and concise paper, dwelling especially on the importance of experts confining their attention and statements to questions of ascertained facts, and avoiding mere personal opinions or interpretations as scientific truth; above all, of becoming a partial witness—the advocate of a party: "The expert is supposed to have no client, even though called by a party; but is expected to state only what are undoubted facts, or reliable and generally-received deductions." The report on *Sale of Medicines and Poisons*, by Drs Rufus Baker and Wm. Deming, contains some valuable suggestions on the too narrow limits of the State law recently passed, and advises the influence of the Society for its amendment. The reports—majority and minor-

ity—on *Lunacy Commissions in the United States and Foreign Countries, their "History, Aims and Results,"* by Drs. A. M. Shew, H. P. Stearns and D. A. Cleaveland, contain much useful information, and both favor supervision of insane asylums by competent authorities as the best means of promoting their efficiency and preventing abuses. The report on *Matters of Professional Interest*, by Dr. L. S. Wilcox, and the County Society reports, are devoted almost exclusively to practical medicine and surgery—Dr. Rufus W. Griswold's *Inquiry into and Observations on the Etiology of Intermittent, at present prevalent in the Valley of the Lower Connecticut*, being exceptional, and which, of all the papers in the volume, most interests the sanitarian; and this, not so much for what it does as for what it fails to do. Recognizing the general prevalence of intermittent in the region named, the author of the paper formulated a series of questions, which he sent to over a hundred physicians practicing thereabouts. From the replies elicited there was abundant evidence of an unusual increase of the disease.

"The facts gathered and presented, and the irresistible logic that follows from the examination of the facts, justifies these conclusions. That undetermined and hypothetical factor, which, for want of a more appropriate name, we call malaria, is not dependent for its existence upon marshes, or ponds, or earth disturbance, or sewer filth, or vegetable decomposition, or any other like thing; it presents itself independently of, away from, and beyond the influence of them; it thrusts itself into notice where they are not, and is for years wanting where they are; and further—they are none of them competent for its development until they have been impregnated with some force or principle from without. . . . . The foulest swamp in the valley is as incompetent to produce the poison of intermittent fever till it has been fructified by some other agency, as the trout brook reservoirs are to produce carp until they have been first stocked with carp or with the fecundated eggs of them. And, as after the last carp cultivated in the pond has been fished out, there will be no more in it until it is stocked again, so also, when the last malarial germ has been eliminated from our valley—as it will be after a few years—we shall have no more intermittent until again the original force is returned to us. The river is not the father of the fish—it is simply the home of it; the fish is bred *within* but not *from* it; it is begotten there by its ancestor of the same type, and only of that ancestor. . . . . The marsh is not the parent of what we call the paludal poison; it is a home where it abides in a greater abundance, though not its only nor its necessary home; it is a place where it more closely congregates, and in which it is probably more prolifically multiplied; but of itself, howsoever foul it may be from vegetable decomposition and the debris of years, it is incompetent for the production of a single particle of the especial essence that induces the phenomena of intermittent fever, until that especial essence has first been engrafted into it. This postulate may seem like dogmatism; but it is a logical corollary from the

facts which the invasion of our territory by ague and fever fully justifies, and which it seems impossible reasonably to avoid. The 'doctrine that intermittent is due to vegetable decomposition,' says Dr. Lyon, 'is destined to suffer modification.' I will add to this—that doctrine, in the sense in which it has obtained, is not defensible before the facts; it is a fallacious deduction from coincident conditions, and only fallacious.....

If it is asked—What then is the essential factor in intermittent fever? the reply must be—I do not know. The object of my paper is not to advertise a theory of cause, but to show the worthlessness of the most commonly received theory, put forward especially by Lancisi. That theory is erroneous, and ought to be abandoned. The abandonment of error is the first step in progress; who is satisfied with the old is little likely to exert himself for the new."

The Influence of Sudden Alterations of Temperature and Humidity upon the Respiratory System, by Dr. C. B. Newton, also contains useful observations in accord with the accepted truths of sanitary science—dangers of soil moisture, and especially that which emanates from a filthy soil, the house surroundings through the cellar: conditions with which most of the readers of the SANITARIAN are familiar.

Milk: its Nature, its Contamination, and as a Vehicle of Contagion, by Dr. M. M. Johnson, and the *Transmission of Tuberculosis from Infected Milk*, by Dr. Noah Cressy, add to the evidence adduced in recent years, both in this country and abroad, of the sensitiveness of milk to effluvia of every kind, and the consequent danger of its contamination, and becoming the means of communicating disease from a variety of external dangers; and its liability to inherent unwholesomeness, in numerous instances, from diseased cows. The subject is of immense interest, and deserves the attention of medical practitioners everywhere. Other valuable papers, to general practitioners especially, we are constrained to omit particular notice of, for the want of space. The volume is, as a whole, one of unusual excellence—a substantial contribution to science, and an honor to the Society.

Illinois Asylum for Feeble-Minded Children, at Lincoln —Eighth Biennial Report, October, 1880—shows continuous success in the progress of this admirable charity. The number of pupils has been increased from 200 to 296 since last preceding report; and estimating the number for whom certificates have been issued, but who had not come in at the date of the report, the number of pupils for the current year will not be less than 325. Of 318 pupils discharged from the Asylum (including transferred, eloped and deceased) since it was opened in 1865, 99 were improved. But "it is believed," the Superintendent (Dr. C. T. Wilbur) remarks, "after a capacity for usefulness has been developed by the school and the training upon the farm, that they should always be kept under the guardianship of

the State upon a farm." The programme of the course of instruction is given in detail, and the parents of many of the pupils express their gratification with the degree of advancement, in an appendix to the report. Altogether the institution appears to be admirably conducted, and is one in which the State may justly take pride.

Brigham Hall Hospital for the Insane, Canandaigua, N. Y., D. R. Burrell, M.D., Physician and Superintendent, reports for 1880: Patients remaining at beginning of year, 59; received, 42; discharged, 37; died, 1; remaining, 63. Of the whole number received, 28 were for first attack, 15 of whom only gave such histories as seemed to indicate probable restoration of reason. Of the causes, as far as ascertainable, in a great majority there was a traceable predisposition, mental bias, or nervous instability, inherited, or acquired in early life. Nervous exhaustion from overwork, the puerperal state, physical injuries and domestic care and unhappiness, appeared to bear an important part in the cases treated during the year. Two were traced to opium habit, three to unchastity, and two to intemperance. There was no case as the result of religious excitement, though there were several which appeared to have been aggravated by injudicious instructions. Since the opening of the hospital in 1855, the statistics are: Admitted, 1,250; discharged, recovered, 356; improved, 342; unimproved, 273; inebriates, 107; died, 109; remaining, 63. Freedom in the grounds, out-door amusements, walks, drives, and excursions for collecting flowers, nuts, mushrooms, and fishing, have been indulged to the utmost limit of safety, and with the most satisfactory results.

The State Lunatic Asylum, Utica, N. Y., Thirty-eighth Annual Report of the Managers, for the year 1880, reports patients under treatment, Oct. 1, 1879, 620; admitted to Oct. 1, 1880, 468—total under treatment, 1,088. Of this number—discharged: recovered, 155; improved, 66; unimproved, 197; as not insane, 14; died, 42. Remaining under treatment Sept. 30, 1880, 614. The percentage of recoveries for the year was 33.92. Of the discharged unimproved, 150 were transferred to other asylums; 45 returned to their families. Total number admitted to the Asylum since its opening, Jan. 16, 1843, 14,040—5,142 bave been discharged recovered; 2,040 improved; average of recoveries 37½ per cent.; 4,241 unimproved; 1,773 died; 230 not insane. After a general review under the head of *Custody and Treatment,* Dr. J. P. Gray, the Superintendent and Physician, concludes that—

"There is no real difference in principle among experienced professional men who have devoted their lives to this branch of science applied to the practical ends of humanity and benevolence. Com-

pared with the manner in which the insane were treated in former times, the present system is indeed one of 'non-restraint.' Intelligent medication, exercise in the fresh air, good and abundant food, moderate and pleasant amusements, congenial occupation as far as practicable, combined with comfortable surroundings, have proved a sufficient treatment for the greater proportion of the insane, so far, at least, as to make the necessity of forcible means and mechanical appliances the 'exception to the rule.' But as these exceptional cases do exist on the universal confession, and always will, they require exceptional treatment."

National Eclectic Medical Association—Transactions for the Year 1880–'81,* is a painstaking volume divided into two parts: (1), reports of officers, committees, addresses and minutes of proceedings; (2), thirty-seven papers on subjects and cases of importance to all medical practitioners, classified under the several departments of practical Medicine and Surgery; and the following, under Hygiene, State Medicine and Medical Jurisprudence: The Economics of Health, by Alexander Wilder, M.D.; Physiological and Hygienic Instruction of Patients, by C. E. Mills, M.D.; Suppression of Syphilis, by J. Tyler Kent, M.D.; Defective Drainage a Cause of Disease, by S. B. Munn, M.D.; Sewer Gases, by John D. Young, M.D.; Disposal of Sewage, by James E. Briggs, M.D.; Public Baths as a Precaution against Epidemic, by Jas. M. Hole, M.D.; Influence of Inebriety on Vital and Criminal Statistics, by H. S. McMaster, M.D., and The Physician in the Witness-box—the Post-mortem and the Evidence, by H. P. Piper, M.D. Dr. Kent's paper on the Suppression of Syphilis and Dr. McMaster's on the Influence of Inebriety on Vital and Criminal Statistics, are particularly noteworthy for the thorough study and comprehension of the subjects treated of, and their suggestive practical conclusions. Of the rest, they are for the most part superficial summaries of the literature under their respective headings, and some of them without cognizance of well-proven errors. For example, Drs. Wilder and Munn both cite, and credit Gen'l Butler with the stale fallacy of doing for New Orleans what the absence of commerce did, and less effectively than others have done with far less plenary powers.

The New York Infant Asyum.—The ninth annual report of this institution, presented at the annual meeting, January 18, 1881, shows continuous progress in its charitable work. The number of women and children in the various branches—61st St., Mt. Vernon and

* Transactions of the National Eclectic Medical Association for the years 1880–'81. Including the Proceedings of the Tenth Annual Meeting, held at Chicago, Ill., June, 1880. Edited by Alexander Wilder, Secretary. Vol. VIII., 8vo., pp. 561. Published in behalf of the Association. New York.

Flushing—January 1st, were, respectively, 147 and 220, an increase of 46 women and 17 children on the previous year; but with a gratifying decrease in the rate of mortality. In the Lying-in department, 61st St., among a total of 228 women and 226 children treated during the year (22 women for confinement), 2 women and 12 children died, as against one woman and fifteen children for 1879; the women, one of heart disease and the other of pneumonia. In the maternity wards, with an average of nearly ten cases monthly, there was no death.

In the Mt. Vernon Home, 47 women and 104 children treated; there were 18 deaths—all children; but one only of contagious disease—diphtheria.

At the Flushing Branch, of 55 women and 109 children treated during the year, there were 9 deaths—all children, 2 of diphtheria.

Liberal donations have continued to be made, and the institution appears to be, in all respects, in a satisfactory condition, except the difficulty of finding homes for the children. "What shall be done with the children?" is becoming a more and more important question, as the number increases from year to year, and the Board of Managers is urged to the consideration of means for their proper disposal.

Wisconsin—Transactions of the State Medical Society, 1880, 8vo., pp. 207, pamphlet; which, including the annual address of the President, J. G. Meachem, M.D., and the usual routine minutes, by-laws, etc., contains eleven papers, all devoted to the cure of disease, with little or no regard whatever to its prevention. A paper on *Diphtheria*, by Dr. B. O. Reynolds, briefly discusses the various opinions, its nature and treatment, but, excepting his own in regard to treatment, he finds them all unsatisfactory. Of 123 cases under his own care, the number of deaths was four only, not counting three to which he was called but a few hours before death, nor cases seen in consultation. No peculiarities of his treatment are deducible—mostly on "general principles." A paper on *Suggestions on Antiseptic Surgery*, by Dr. S. Marks, concludes that "whether the success is due more to the antiseptics themselves, than to the improved method of dressing accompanying this system, we think there may be room to doubt." The papers, for the most part, are concise and practical.

The Weight and Size of the Body and its Organs, compiled by J. S. Wight, M. D., Professor of Surgery at the Long Island College Hospital, Brooklyn, N. Y., for the use of Medical Students, is just such a manual as all medical students ought to possess.

Sewer Gas and Its Dangers* is a useful hand-book, in so far as that it is plainly written, and furnishes a good lesson in object teaching by illustrated examples of bad plumbing, with which all city houseowners and keepers would do well to make themselves familiar, as well as the best means of overcoming the dangers arising therefrom, which is the object of this book. The proposed "perfect system" of house drainage, however, as *the* remedy, does not wholly meet the difficulty, while it possesses some good qualities—the exclusive use of iron pipe and absolutely tight joints. But "one trap only in the whole system, except under the kitchen sink, wash basins and bath tubs, or, better still, they (traps) should be entirely discarded," even in virtue of absolutely perfect ventilation, are propositions which do not compensate for the well-known conditions and properties of sewer gas and offensive odors due to foul waste pipes. Common observation justifies the conclusion that, no matter how perfect the flush of the water-closet, or large the "only trap" at the distal end of the main house-drain, the stretch of pipe between becomes foul, and the gases emanating therefrom escape wherever there is least resistance, and this *is not*, by any means, always downward through the "only trap," which "holds so large an amount of water it is improbable that any pressure from the sewer would 'force' it"—an explanation which recognizes the pressure of sewer gas from without, as opposed to the "strong downward current in every water-closet when opened" under the "perfect system." In short, the "perfect system" herein advocated contains several imperfections, evidently due to a want of perfect knowledge of physics.

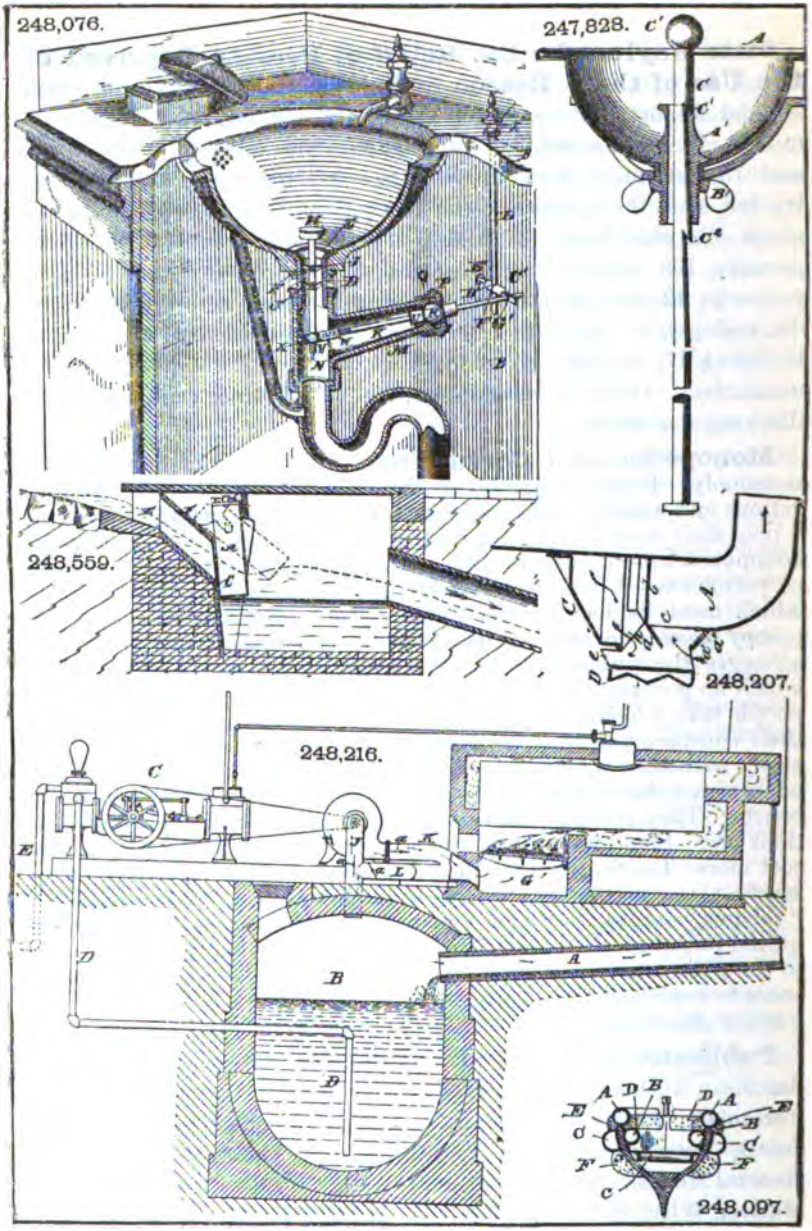
The Report of the Pennsylvania Hospital for the Insane for the year 1879—Dr. Thomas S. Kirkbride, Physician-in-Chief and Superintendent—gives the statistics of 8,082 patients, the whole number treated in that institution from 1841 to 1879 inclusive. The chief causes attributed are: Ill-health of various kinds, 1,477; intemperance, 754; loss of property, 268; grief, 373; religious excitement, 236; domestic difficulties, 161; puerperal state, 307; mental anxiety, 498; injuries of the head, 109; disappointed affection, 99; masturbation, 98. Of 7,690: cured, 3,681; much improved, 618; improved, 1,315; stationary, 1,016; died, 1,060; remaining, 392. Other State institutions for the care of the insane are reported to be in a forward degree of progress, and, when complete, the State will have room for the care of 2,000 patients without crowding.

*Sewer Gas and Its Dangers; with an exposition of common defects in house-draining, and practical information relative to their remedy. By George Preston Brown. 16mo, pp. 242. Illustrated. Chicago: Jansen, McClurg & Co. Price, $1.25.

State Asylum for the Relief of Persons Deprived of the Use of their Reason. Philadelphia, 1880, reports (64th Annual Report): Patients remaining at beginning of year, 90; admitted, 40; discharged, 36—14 of whom were restored, 9 improved, and 13 stationary; died, 9. Statistics are given of 2,054 patients treated since the opening of the institutions. Of 991 the causes are given—the chief being: Ill health, 197; domestic trouble, 118; intemperance, 108; anxiety, 82; puerperal, 59; over-exertion, 48; loss of property, 42; disappointment, 40; organic disease of brain, 39; grief, 39; epilepsy, 39; masturbation, 38; religious excitement, 27; blow on the head, 17; syphilis, 16; old age, 14; opium, 13. 55 per cent. were unmarried. Of the whole number, 866, or 42.16 per cent., have been discharged restored.

Monopolies and Corruption.—The danger of our times is monopoly. It is a conspiracy of the rich against the poor. Corporations and wealthy men combine their capital, or, as they term it, "pool their money," and get control of something which is a great common want—it may be railroads, or telegraphs, or food, or coal, or petroleum—it is no matter what the thing is, if it is something which must be had by the public. The combination spends its money lavishly to ruin all its competitors, and then, as a monopoly, scourges the public and levies taxes upon the wants of mankind, which no government in Europe would dare to propose. Let the people take a lesson from these men. The secret of their success in their conspiracy against the masses is combination. They know precisely what they wish to accomplish, and they act as a unit. They concentrate their efforts to obtain control of legislative bodies and of courts. They purchase, in various ways, prominent men suitable for their use. Some are sold at the low price of a "free pass," others cost more. The transaction puts on the thin disguise of being "counsel fees," or money for "election purposes," or "discriminations," "rebates," etc., etc. When a man has been bought he is not required to put on the regulation dress or wear a badge, but he goes to the polls as a straight Republican or Democrat, and canvasses for votes to represent the people.—H. H. Stuart, Esq.—*Jl. Amer. Agricultural Association.*

Publications Received.—Of Wood's Library of Standard American Authors: Wilson's Continued Fevers, Johnson's Medical Formulary, Pavy's Food and Dietetics, Barwell's Diseases of the Joints, Lyman's Artificial Anæsthesia and Anæsthetics, Withaus' General Medical Chemistry—Wm. Wood & Co., New York; Edwards' Malaria, What It Means—Presley Blakiston, Philadelphia; Michigan State Board of Health Report, 1880; Massachusetts State Board of Health, Lunacy and Charity Report—Public Health Supplement, 1880; Galvanic Accumulator, Louis Elsberg, M.D.; State Medicine, G. P. Conn, M.D.; Laryngeal Tumors, E. F. Ingals, M.D.; Jacobi's Virchow.



Printed specifications with full illustrations of any patent issued in the United States may be obtained from the Patent Office, Washington, for twenty-five cents.

248,076. Basin-Waste. Henry M. Weaver, Mansfield, Ohio. Filed February 24, 1881.

Claim.—1. In a basin-waste, the combination, with a lever having

a ball attached thereto, of a hollow arm in which the forward end of the lever plays, and which has its free end socketed, and an axially-perforated cap adapted to fit over the end of the said hollow arm and hold the ball in the socket thereof, substantially as set forth.

2. In a basin-waste, the combination, with a hollow arm in open communication with the waste-pipe and having vertical lugs located within its outer end, of a lever-arm having a squared block secured thereto or made integral therewith, said block being adapted to be received within the lugs aforesaid and to limit the lever to a vertical movement, substantially as set forth.

3. In a basin-waste, the combination, with a hollow arm in open communication with the waste-pipe, and having vertical lugs cast within its outer end, which is socketed, of a lever-arm, provided with a squared block and a ball adapted to be received, respectively, within the socket and lugs of the hollow arm, and a device to retain the said ball within the socket of the arm, as aforesaid, substantially as set forth.

4. In a basin-waste, the combination, with a lever adapted to be actuated in vertical reciprocating movement and provided with a screw-threaded perforation at its forward end, of a valve the stem of which is adapted to be received within the lever-perforation, substantially as set forth.

5. In a basin-waste, the combination, with a hollow arm communicating with the waste-pipe, and a lever having its fulcrum in the outer end of said hollow arm, of a valve-stem screw-threaded at its lower end, and a block or connecting device provided with screw-threaded openings for the valve-stem and the lever, substantially as set forth.

6. In a basin-waste, the combination, with a hollow arm communicating with the waste-pipe, and a lever having its fulcrum in the outer end of said hollow arm, of an operating-rod extending through the stand-top, and an arm adjustably secured to the lower portion of the operating-rod, and having the outer end of said lever connected therewith, substantially as set forth.

248,559. Disinfecting Attachment for Sewers, etc. James D. Jackson, Washington, D. C., assignor of one-half to Louis Winters, same place. Filed August 25, 1881.

Brief.—The perforated box containing disinfectant material is pivoted in bearings at the opening of the sewer, forming a valve.

Claim.—A foraminous receptacle for disinfectant material, pivoted in suitable bearings, and forming a valve for intercepting and absorbing gases in sewers and sewer-connections, substantially as described.

248,216. Removing House-Sewage and Ventilating the pipes therefor. Henry Reese, Baltimore, Md. Filed February 21, 1881.

Claim.—1. The combination, with a conduit arranged to convey sewage from a house or houses, of an air-tight reservoir into which said conduit discharges and into which it deposits the sewage, an air-exhausting apparatus arranged to exhaust the air and gases from the reservoir and the sewage-conduit and force them into a furnace, the said furnace, and a suitable pump to remove the sewage from the reservoir, as set forth.

2. The combination with the conduit A, reservoir B, and furnace G, of the blower D, and the pipes J K L, provided with dampers *a a*, all arranged to operate substantially as set forth.

247,828. Water-Closet Fixture. John H. Jennings, New Bedford, Mass. Filed July 5, 1881.

Claim.—The valve-rod C, having notch or notches C^2, in the side thereof, in combination with the enlarged part A', having a cut-away portion for notch C^2 to rest upon, as and for the purpose described.

248,207. Ventilator. Joseph Patchett, Lawrence, Mass. Filed April 22, 1881.

Claim.—1. In a ventilator, the outlet-flue B, in combination with the inlet-flue A, the inlet-flue being covered at the top and formed with the side opening *c*, substantially as and for the purposes specified.

2. In a ventilator, the outlet-flue B, in combination with the inlet-flue A, the top or outer opening of the outlet-flue being on a higher level than the side opening of the inlet-flue, substantially as and for the purposes specified.

3. The outlet-flue B and the covered inlet-flue A, in combination with the rim D and the cover C, substantially as and for the purposes specified.

4. The outlet-flue B and the covered inlet-flue A, formed with the side opening, *c*, and provided with the deflector *a* and the perforated flange *a'*, in combination with the rim D, substantially as and for the purposes specified.

248,097. Life-Boat. Albert Holmes, Petaluma, Cal. Filed July 5, 1881.

Claim.—In a life-boat the combination and arrangement of the air-tight metal tubes A B C, secured upon the inner and the outer sides of the boat-frame in a horizontal manner, and alternating with horizontal layers or fillets of cork, D E F, all when constructed and arranged substantially in the manner as herein set forth and specified.

MISCELLANY.

The Moliere Thermo-Electric Baths, 21 W. 27th St., New York, combine most of the beneficial features of Turkish, Russian and Electric Baths, and are open at all times for both ladies and gentlemen. The baths are so arranged that the bather constantly has pure cool air to breathe; the head remains cool and dry.

Professor A. E. Foote's advertisement of **Minerals and Natural History Specimens** is worthy the attention of all teachers, students, amateurs and institutions interested in material for instruction in the study of natural history, or the formation of cabinets. It is their best recourse for both purchase and exchange.

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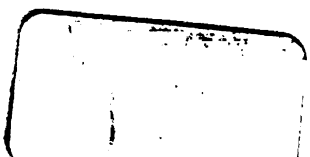

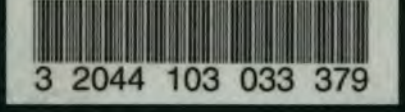
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